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Index Supplement of the Sanitary Record, with Part 133, New Series (Whole No. 394), July 15th, 1890

THE

Sanitary Record

A MONTHLY JOURNAL OF

PUBLIC HEALTH

AND THE

PROGRESS OF SANITARY SCIENCE AT HOME AND ABROAD

JULY 1889—JUNE 1890. VOL. XI. NEW SERIES

VOL. ~~XX~~ OLD SERIES.

XXI

LONDON

W. H. ALLEN AND CO., 13 WATERLOO PLACE

1890

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PRINTED BY

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LONDON. S.W.

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ORIGINAL PAPERS.

CREMATION.*

In addressing a Medical Association in order to open a discussion on Cremation as a mode of disposal of dead bodies, I propose to restrict myself rather to the medical than to the legal or religious questions involved in the subject. The legal advocates of cremation have shown that the practice is not illegal; and eminent theologians have proved that no Christian doctrine can be in any way influenced by the manner or the time in which a dead human body is decomposed or destroyed. It has also been shown that any medico-legal objection can be satisfactorily answered by insisting upon positive and accurate proofs of the real cause of death before a body is allowed to be cremated. And I need not take up your time by any historical notice of the rise and progress of the Cremation Society of England. I need only say that the Society has already consumed at Woking the bodies of sixty-nine persons, three within the last week, and has almost completed its new buildings, including a chapel with a columbarium. The honorary secretary of the Society is here to-night, and is ready to supply any information which may be desired as to the forms of application required from all those who prefer cremation and urn burial to burial in the earth, or who may wish to join the Society, and as to the economy of the process.

All this I will pass over without further comment, and proceed at once to the consideration of that part of the question in which we, as medical men, are most interested, namely, the effect of different modes of disposal of the dead upon the public health. And here, again, I propose to omit a good deal of what I may assume to have been abundantly proved, and to be matter of common knowledge—I mean the injurious effects of burial under churches or in crowded graveyards or cemeteries, upon the health of the surrounding population. Since the work of Walker on graveyards, and the report of Chadwick on intramural interment, forty or fifty years ago, the evils due to burial in the earth have been more or less generally acknowledged. And lately the Church of England Funeral Reform Association has succeeded in impressing the necessity for inquiry upon the Government. Inquiry has been promised, and we hope it may be full and complete. I do not presume to foretell the conclusions or recommendations of the Commissioners; yet I cannot doubt that some attempt will be made to abate some of the evils which are unavoidable under the present faulty system. But there is one of the evils necessarily associated with burial in the earth in any way—whether in brick graves or coffins, or in baskets or shrouds, as advocated by Mr. Seymour Haden—to which I ask for the special attention of my medical brethren to-night—I mean the spread of infective diseases, and the impossibility of succeeding in our efforts to stamp them out, if burial in the earth of the bodies of those who die of such diseases is not prohibited.

The disposal of the dead and the public health.

I need not remind you of the rapid advance in recent years of our knowledge of the dependence of a considerable number of contagious and infective diseases upon the action of a morbid poison, or of some low form of vegetable or animal organism, each form or variety causing some definite form or variety of specific disease. Speaking first of human infective diseases, I need not remind you of the association of phthisis with its bacillus—of scarlatina, of diphtheria, of leprosy, of typhoid fever, of pneumonia, of cholera, of tetanus, of erysipelas and various forms of septicæmia and surgical fever with specific microbes as distinct from each other as the seeds of the fig from those of the thistle, of poppy from mignonette, or of wheat from barley or oats.

With these associations you are all familiar; but I doubt if very many among us have thought much of the way in which we preserve these microscopic enemies of the human race and assist them in their ravages. We attempt to destroy them while our patients are alive by the use of antiseptics or disinfectants; and in the same way, and by isolation of the patients, we try to prevent their extension from sick to healthy persons. But as soon as a patient is dead, the body is disposed of in the very way, of all others, most favourable for the conservation and multiplication of microbes. Veterinary surgeons have been far wiser. When the cattle plague was stamped out, it was not only by the strict separation of the sick from the healthy animals, by slaughtering all those diseased, and by burying their bodies at least 10 feet deep, but by covering them with plenty of quicklime. It had been proved long before that simple burial would have been insufficient. I brought this fact, in 1880, before the annual meeting at Cambridge of the association of which you are a branch. But long before that I had shown cause to suspect that the plague in Egypt was in part due to the mode of burial of the dead in the Delta. In January 1845—more than forty-five years ago—an article of mine was published in the *British and Foreign Medical Review*, then under the direction of Sir John Forbes, "On the Contagion of Plague and on Quarantine," in which I suggested that burial in some of the villages in the Delta was a "very probable means of keeping up a constant supply of contagion," and that the "seeds of contagion were so perpetually preserved" (p. 48). I wrote as follows:—

Earth burial and the Plague.

"The inhabitants have a religious or superstitious objection against burying their dead where they can be reached by water. Now, these districts are annually overflowed by the Nile, and the people accordingly preserve their dead above ground in receptacles which are nothing more or less than a cottage, with one door and no windows. In these places the dead are laid, as an Egyptian expressed himself, 'like herrings in a barrel.' Very soon after the death of a person, he is brought, with his clothes on, the door is opened, and the corpse laid upon the others until the place is full. The door is then built up, and another dead-house constructed. . . . The corpses do not always putrify but in dry seasons are mummied, and the poison may not be decomposed. And the clothes and various articles about the person, enclosed as they are soon after death in confined situations, without exposure to air, are just what experience has shown to be active instruments of contagion."

I heard afterwards from Dr. Farquhar, of Alexandria, and Dr. Abbott, of Cairo, that sporadic cases of plague observed in these villages had been traced to contagion from the dead-houses, and that during ten years every case of plague observed in Alexandria had been traced to one of these villages. I may say,

* Address delivered May 22, 1889, in opening a discussion on Cremation, at a meeting of the Metropolitan Counties Branch of the British Medical Association at Ealing, by Sir Spencer Wells, Bart.

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before I pass on, that in the same article I supported the proposal to try whether inoculation of bovine carbuncle might be as protective against plague in man as vaccine against variola.

At Cambridge, in 1880, I pursued the question of contagion further, and examined it in connection with burial, not above ground, but under the earth, referring to Darwin's observations "on the formation of mould," made when he was a young man. I will read now the passage exactly as I read it at Cambridge, to show how curiously confirmatory of the then recent conclusions of Pasteur were the facts observed by Darwin:—

Earth burial and contagion.

"In Darwin's paper, read at the Geological Society of London, in 1837, he proved that in old pasture land every particle of the superficial layer of earth overlying different kinds of subsoil has passed through the intestines of earth-worms. The worms swallow earthy matter, and after separating the digestible or serviceable portion, they eject the remainder in little coils or heaps at the mouth of their burrows. In dry weather the worm descends to a considerable depth, and brings up to the surface the particles which it ejects. This agency of earth-worms is not so trivial as it might appear. By observation in different fields, Mr. Darwin proved, in one case, that a depth of more than three inches of this worm-mould had been accumulated in fifteen years; and, in another, that the earth-worms had covered a bed of marl with their mould in eighty years to an average depth of thirteen inches."

Pasteur's recent researches on the etiology of "charbon" show that this earth-mould positively contains the specific germs which propagate the disease, and that the same specific germs are found within the intestines of the worms. The parasitic organism, or *bacteridium*, which, inoculated from a diseased to a healthy animal, propagates the specific disease, may be destroyed by putrefaction after burial. But, before this process has been completed, germs or spores may have been formed which will resist the putrefactive process for many years, and lie in a condition of latent life, like a grain of corn, or any flower-seed, ready to germinate, and communicate the specific disease. In a field in the Jura, where a diseased cow had been buried two years before, at a depth of nearly seven feet, the surface-earth not having been disturbed in the interval, Pasteur found that the mould contained germs which, introduced by inoculation into a guinea-pig, produced charbon and death. And, further, if a worm be taken from an infected spot, the earth in the alimentary canal of the worm contains these spores or germs of charbon, which, inoculated, propagate the disease. And the mould deposited on the surface by the worms, when dried into dust, is blown over the grass and plants on which the cattle feed, and may thus spread the disease. After various farming operations of tilling and harvest, Pasteur has found the germs just over the graves of the diseased cattle, but not to any great distance. After rains, or morning dews, the germs of charbon, with a quantity of other germs, were found about the neighbouring plants; and Pasteur suggests that, in cemeteries, it is very possible that germs capable of propagating specific diseases of different kinds, quite harmless to the earth-worm, may be carried to the surface of the soil ready to cause disease in the proper animals. The practical inferences in favour of cremation are so strong that, in Pasteur's words, they "need not be enforced."

It would be easy to show that cremation of diseased animals would be a more certain mode of destroying the seeds of infective diseases than burial in quick lime; and that simple burial in earth is a very certain mode of preserving these seeds of the germs. They may or may not be destroyed, wholly or partially, by the process of putrefaction—probably they are often wholly destroyed. But occasionally they are preserved with all their destructive powers for many years. I have more than once cited a very remarkable case, on the authority of Mr. Wheelhouse, of Leeds, where the seeds of scarlatina germinated after having been buried for thirty years. In a Yorkshire village, part of a closed graveyard was taken into the adjoining rectory garden. The earth was dug up and scarlatina soon broke out in the rectory nursery, and from thence spread over the village. It proved to be of the same virulent character as the scarlatina which thirty years before had destroyed the villagers who were buried in the precise part of the churchyard which had been taken into the garden and dug up.

And what is true of plague and of charbon and of scarlet fever, seems to be true of yellow fever. Indeed, the investigation as to yellow fever has been carried out much more fully. In the Official Consular Commercial Reports from Brazil in 1883, a summary is given of the investigations into yellow fever by Dr. Domingos Friere. He records a number of experiments which he considers establish the parasitic nature of yellow fever, and prove that the parasite is an amarillus microbe, a cryptococcus classified among the algæ, which is always found in every case of true yellow fever. Dr. Friere terms it *Cryptococcus Zanthogenicus*. He showed experimentally that the parasite "resides in the blood, and, therefore, in all the organs the blood traverses," and that "yellow fever is propagated by contagion from individual to individual, that it is primitively a contagious disease, but may become infectious as soon as sufficiently many focuses accumulate." He discovered that the colour of the black vomit is not due to altered blood, but to an alkaloid or extractive produced by excretion or changes in the microbes. By cultivating the cryptococcus on gelatine within a Pasteur globe, he was enabled to obtain an artificial black vomit. And from the earth surrounding the body of a man who died of yellow fever and was buried a year before, he was also able to obtain and cultivate the cryptococcus and produce artificial black vomit. "Another experiment was made with the same earth. A guinea-pig, whose blood, examination showed was in a pure state, was shut up in a confined space in which was placed earth taken from that grave. In five days the animal was dead, and its blood proved to be literally crammed with the cryptococcus in various stages of evolution. The urine was albuminous and the brain and intestines were yellow with the peculiar pigment of the cryptococcus." "In view of such facts," asks Dr. Friere, "how can it now be said that the germs of yellow fever disappear with the burial of the corpse? On the contrary, the cemeteries are perennial focuses of contamination, above all as regards the epidemic diseases whose parasitical nature is now accepted in science."

Earth burial and yellow fever.

All this has been forcibly stated by Dr. Cameron in his admirable article reprinted from the *Scottish Review* of July 1887, entitled "The Modern Cremation Movement." And he adds: "Dr. Friere's observations, verified in all their details by his assistants, 'showed that the germs of yellow fever perpetuate themselves in the cemeteries, which are like so many

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nurseries for the preparation of new generations destined to devastate our cities. Through the pores of the earth these germs spread into the atmosphere, others are carried by the torrential rains so frequent among us to the streets and squares, and finding there means adequate for their evolution, give rise to the eruption of epidemics in the summer, which is the most proper season for their sporulation.' As a temporary provision, Dr. Friere recommends that the cemeteries should be removed to a distance from populous places. 'As a definite and radical measure,' he continues, 'the practice of cremating the bodies would suit completely, and it would be the surest means of extinguishing the epidemics which every year ravage, with greater or less intensity, our most flourishing centres of population. If each corpse,' he adds, 'is the bearer of millions of millions of organisms that are specifics of ill, imagine what a cemetery must be in which new foci are forming around each body. Imagination is incapable of conceiving the literally infinite number of microbes that multiply in these nests. In the silence of death these worlds of organisms, invisible to the unassisted eye, are labouring incessantly and unperceived to fill more graves with more bodies destined for their food, and for the fatal perpetuation of their species.'" The source of the malarial fever of Italy has not yet been so fully investigated with reference to burial, but a distinguished Roman professor, Dr. Crudeli, has proved that the specific organism of the malarial fever of the Campagna does increase and multiply in the soil. And only yesterday I received a letter from Dr. Drummond of Rome, in which he says: "The spread of malaria must have been increased by burial during many centuries within the walls of Rome of persons who had died from malaria. The Romans, in Republican times, were most careful to forbid burial within the walls. The present public cemetery of Rome is quite close to the walls, and the building of houses near it has been stopped, as they are not considered healthy. The practice of cremation is rapidly increasing. In 1886 the number of cremations in the Roman Crematorium was 119; in 1887, 155; and in 1888, 202. The practice is increasing throughout Italy, and there is a growing feeling in favour of it, especially in cases of death from infectious fevers."

Earth burial and malarial fever.

I think I have done quite enough to suggest topics for discussion. But I cannot conclude without a few remarks upon one proposed reform of the present mode of burial in the earth, that known as the "earth to earth" system of Mr. Seymour Haden. And with respect to this supposed reform, I prefer quoting what Sir H. Thompson has published in his last book *Modern Cremation*, than to add any impressions of my own. He says: "The poisons of scarlet fever, enteric fever (typhoid), small-pox, diphtheria, malignant cholera, are undoubtedly transmissible through earth from the buried body by more than one mode. And thus, by the act of interment, we literally sow broadcast through the land innumerable seeds of pestilence; germs which long retain their vitality, many of them destined at some future time to fructify in premature death or ruined health for thousands. Especially is this the case in the 'earth to earth' system, when the exposure of the body to the soil is instant and complete. The most dangerous elements are no doubt decomposed and rendered less virulent by retention in close coffins for a few years before contact with the surrounding soil takes place. But the adoption of a system which is designed to hasten dispersion of the elements by any and every channel open in the soil six feet below the surface, so that the same spot may be similarly used after a brief term of years, is fraught with risk to the living. It is vain to dream of wiping out the reproach to our civilization which the presence and power of these diseases in our midst assuredly constitute by any precaution or treatment while effective machinery for their reproduction is in constant daily action." I venture to hope that a consideration of the facts which I have stated, or rather of a subject of which I have only been able to offer a very hasty and imperfect sketch, may be followed by a discussion which will lead the members of this branch of our association, and of the medical profession generally, to assist in the revival of an ancient mode of disposal of the dead, and to make widely known the sanitary advantages of cremation and urn burial, or of the burial in the earth, not of the corruptible body, but of its harmless ashes.

HAVING proved their qualification in accordance with the Worshipful Company of Plumbers' regulations, the following journeymen plumbers of Plymouth have been enrolled upon the register for qualified plumbers:—J. E. Adams, 29, Hill Park Crescent; S. R. Bishop, 24, Gibbons Street; R. F. Hitt, 1, Alma Place; J. Moxey, 1, Norley Place; C. W. S. Richards, 10, Maidstone Terrace; S. H. Rowling, 3, Chapel Place, Chapel Street; J. I. Shepheard, 3, Trafalgar Street; J. A. Stowell, 4, Queen Street Cottages.

BY way of experiment, in beautifying the paved open spaces of London, the Metropolitan Public Gardens Association, with the sanction of the First Commissioner of Works, has just placed in the two upper corners of Trafalgar Square, large banks of flowering and foliage plants, which will be renewed from time to time, as occasion may require, during the next three months, in order that they may always present a bright and attractive appearance. The work has been undertaken by Mr. J. E. Child, Nurseryman, of 130, Lewisham High Road, S.E.

RABIES.—The Executive Committee of the Middlesex County Council under the Contagious Diseases (Animals) Act have unanimously adopted the following resolution:—"That this authority, considering the terrible character of hydrophobia and the increase which has occurred in the present year both in that disease and in canine rabies, and the danger of still greater increase of those diseases, desires to urge most strongly upon the Privy Council the necessity for such prompt action as will ensure the proper muzzling of dogs and their proper control throughout the United Kingdom, and the prevention of importation of dogs from other countries unless under strict quarantine regulations. The committee also call attention to the need of fresh legislation for the effectual carrying out of these objects, as well as for making owners more responsible than they are at present for injuries done by their dogs." The Clerk to the Council was directed to forward a copy of the resolution to the Privy Council. It was remarked during the discussion that there were 27 deaths from hydrophobia in metropolitan and extra-metropolitan Middlesex in 1885, and nine in 1886 prior to the issue of the muzzling order of that year, and the good effects of that order had apparently lasted until the end of 1888, notwithstanding its revocation in 1887, as there had been no deaths from hydrophobia after the making of the order during 1886, 1887, or 1888, but that there had already been four deaths in 1889, and that during the quarter just ended there had been twelve certified cases of rabies in extra-metropolitan Middlesex, against two cases only during the corresponding quarter of 1888.

INFANTICIDE, BABY-FARMING, AND THE INFANT LIFE PROTECTION ACT, 1872.

By J. Brendon Curgenven, M.R.C.S., &c.

(*Continued from page* 463).

On March 18, 1867, two months after the deputation to the Home Secretary, I read a paper on "The Waste of Infant Life," * before a general meeting of the Health Department of the Social Science Association. A few quotations from that paper will continue and amplify the history of the subject.

"None but those," I said, "who have turned their attention especially to the causes of the excessive mortality amongst infants and young children, can form an adequate idea of the vast amount of infant life that is year by year sacrificed in this country through neglect and ignorance. In numerous instances it is the mother's or nurse's desire that the child should die, and the desire is father to the deed; whether it be executed directly or indirectly, by violence, by withholding sustenance, or by neglect, the effect is the same, and the deed is equally murder. Infanticide by violence destroys a great number of children, but infanticide by neglect destroys thousands annually. Ignorance, too, of the most ordinary requirements of infants on the part of mothers and nurses destroys multitudes, and prejudice adds to their number."

The waste of infant life.

The excess of mortality occurs where we might expect it, among the children of the labouring classes, especially in manufacturing counties and towns, and among illegitimate children.

In the agricultural counties and towns the infantile death-rate is "about 20 per cent. under five years of age, while in the manufacturing counties and towns it is from 30 to 35 per cent.; in London it is 32, and in Liverpool 45 per cent. under that age." The children of the educated classes die "at the rate of 11 per cent. under 5 years of age." Illegitimate children die at the rate of from 60 to 90 per cent. "The medical officer of St. Giles's Workhouse says that fully 90 per cent. of these children that go out of the workhouse die. The medical officers of the Paddington Union say that nearly all the illegitimate children in their respective districts die. In some of the districts of Marylebone, Dr. Bachoffner found that 87, 93, and 96 per cent. respectively died."

To show the effect of burial clubs and life assurance on the chance of life of the assured infants, "I will take some statistics of the town of Preston as given for 1861. According to the official figures, 18 in 100 children of the upper class annually die in Preston before attaining the age of 5 years; in the middle class 36 or 37 per cent. In this same district, while infants of labouring men outside the clubs die at the rate of 36 per cent. before reaching 5 years, children of the same class who are assured in the burial clubs die at the rate of from 62 to 64 per cent." This statement is supported by many other facts known to sanitarians, tending to prove that the causes which hasten the decline of infantile life, and give rise to the present excessive mortality amongst children, are not purely hygienic and physical, but are of a moral and political character, concerning the statesman not less than the physician. The fact of any number of children of the poor being entered in a burial club ensures a terrible increase in the proportion of deaths among them. It would appear that from the moment the death of a child is provided for and systematically contemplated, it is likely to be neglected, or less anxiously watched, and its chances of life are diminished. The extent to which the assurance of the lives of infants is carried may be gathered from some figures contained in a Blue Book published in 1874. The premium is 1d. per week, and is collected by a large body of agents, who receive a commission of probably 15 per cent. The sum assured on the lives of infants under 10 years of age amounted to the immense sum of £1,250,000; on those under 1 year, £69,548; and on those under 5, £436,031. There is only one apparent remedy for this large and perpetually active cause of infant mortality, and that is the prohibition of the assurance of the lives of children, or of their entry into burial clubs under a certain age, say 5 years.

Burial clubs and life assurance.

In the Midland manufacturing counties the pernicious use of opium and its preparations is carried to a great extent, and the poor, wizened, dull, ill-nourished infants are really pitiable to behold. The mothers place their infants from a few weeks old with old women, to be cared for during the day, to enable them to work in the factories, and these old dames feed them on pap, and give them opiates to quiet their cries. The mortality amongst these children amounts to over 50 per cent.; this might be lessened considerably did the manufacturers follow the example of M. Dolfus, the great mill-owner at Mulhouse, and establish a maternity fund in connection with each factory, from which the mother should receive a sum equal to her weekly wages for a period of two months.

On May 13, a discussion took place on my paper on "The Waste of Infant Life," Dr. William Farr in the chair, and the following resolutions were passed:—

Proposed remedies.

1. That it is desirable, for the checking of the excessive infantile mortality in manufacturing towns where women are employed, that a maternity fund be established in connection with each factory, out of which the lying-in woman should receive a sum equal to her weekly wages, and in lieu thereof, for a period of two months from the birth of her child, provided it lives, to enable her to devote the necessary maternal attention to it.

2. That every encouragement should be given to the establishment of infant day-nurseries, where the young children of female operatives and other working women could be properly cared for in the absence of their mothers at work.

3. It having been proved that very great mortality exists among illegitimate children in the care of hired nurses, a fact which shows the existence of much ignorance, carelessness, and culpable neglect on the part of these nurses, the Health Department of this Association is of opinion that protection should be accorded by the State to illegitimate children, by requiring that all persons taking charge of them should be registered or licensed, and placed under the supervision of the Poor Law medical officer of the district in which they reside.

In the following year, 1868, Mr. Ernest Hart, the editor of the *British Medical Journal*, carried out, with the aid of the late Dr. A. Wiltshire, an important inquiry into the extent and character of baby-farming in London. By an advertisement in a daily paper offering the sum of £10 for the adoption of a child, he received upwards of 300 answers from persons anxious to take the child off the hands of the mother. Only a minority of these applicants were baby-farmers in the true sense of the term; others honestly desired to adopt a child either to fill the void of one lost, or to give solace and occupation to a lonely life The inquiry showed that there was a large demand

Inquiry into baby-farming.

* *Sessional Proceedings of the National Association for the Promotion of Social Science*, 1866-67, p. 222-36.

for children, and a corresponding if not quite so large a supply. There was no difficulty in disposing of a child for a premium of £10, or even for £5, either through the medium of an advertisement or the agency of a midwife. "Hence," says Mr. Hart,* "the demand for such an industry, a demand so urgent, so considerable, and based upon such pressing considerations, that it cannot be overlooked, and any attempt to suppress the corresponding supply must fail."

Through the knowledge of facts and proofs of guilt gained by interviews with baby-farmers and so-called midwives, he says, "that some kind of registration of children put to nurse is required, and that Poor Law medical officers should have the power of entering, inspecting, and regulating baby-farms," thus confirming my opinion, as expressed through the Harveian Society two years previously, and through the Social Science Association the year before.

For the full particulars respecting the working of the lying-in establishments of the midwives, the disposal of the children, and the working of the baby-farms, I must refer my readers to the *British Medical Journal* for January, February, and March 1868.

On March 15, 1869, I read a paper on "Baby-farming and the Registration of Nurses" before the Health Department of the Social Science Association.† I there described the system by which midwives and baby-farmers carry on their business through advertisements in the papers, the treatment of the infants, their great mortality, mentioning some cases of the extensive system of child-murder such as that of Charlotte Winsor, who, it was stated in evidence, suffocated infants under feather beds; and that of Mrs. Jaggers, of Oxford, who disposed of between forty and sixty children in three years. "It can easily be perceived," I say, "what an extensive traffic in infant life goes on in this country, especially when we bear in mind that upwards of 50,000 illegitimate children are born annually, and fully two-thirds of them are 'put out to nurse.' This traffic, too, is principally carried on by ignorant and unscrupulous women, ignorant of the proper method of rearing a baby by hand, and unscrupulous of the lives of the infants in their care. The life of a nurse-child is a life of suffering, and its death is too often a death of starvation." It has no power of making known its sufferings or treatment; it is as helpless in this respect as a dumb animal, but the animal is protected by the law where the infant is not. A great society of philanthropists watches unceasingly after the treatment of dumb animals by means of inspectors from one end of the kingdom to the other; but infants, though dumb, are allowed by the laws and the philanthropists to be starved, drugged, and suffocated with impunity; not even the police nor the Home Secretary himself dare venture to look into the dens where this cruelty is carried on. The police can only obtain a warrant to search a house on information given to them by someone who knows that crime is being committed there; but the baby-farmers, midwives, and the mothers are interested in keeping their proceedings secret, and no information can be obtained by the police to enable them to take out a search warrant. Mr. A. Gernon, in his answer to Question 602, before the Select Committee on Protection of Infant Life, said from "one house kept by a midwife for secret confinements I traced 46 females who had been confined there in two years, and out of that house we traced a number of children found about the streets [dead]; the woman herself is now in prison, and the baby-farmer as well; but in tracing this case, we *could not get a criminal charge* for a long time, and this woman was convicted of conspiracy only—conspiring to foist a child on to a gentleman." The police knew that these children found in the streets died by foul means, neglect, or suffocation in a certain house, yet they could not get any information on which they could act through a period of two years, and then could only, at the end of that time, get the woman convicted of quite another offence. What hypocrites are some people who are driven into a frenzy of horror when a mouse has its tail cut off, or a rabbit has a dose of poison injected under its skin by way of experiment, and who stop their ears and turn their faces aside when the infanticide or starvation of infants is mentioned, when the criminal cruelty of baby-farmers is spoken of, and they are appealed to for help to obtain protection for dumb infants as well as for dumb animals! Not one of these philanthropists gave one word nor one penny to help towards amending the laws to check the crime of infanticide, and open up the dens to the light of day, where suffering infants passed their short lives in hunger and agony.

At the end of the paper on Baby-farming before mentioned, I gave a sketch of the chief points that should be embodied in the clauses of an Act for the registration of nurses, and the inspection of baby-farms; stating in answer to remarks "that he did not question the conduct of any institutions, he wished only to provide a remedy against the extensive traffic of infants that was carried on by individual women, and all he asked for was that the individuals concerned in this traffic should be placed under inspection, that they might be prevented from committing those crimes of infant murder and slow starvation, of which occasionally the horrible details are given in the coroner's court. It must not be considered that we desired legislation for the protection of the illegitimate children of the lower classes only, for it must be borne in mind that a good number of infants that are 'put out to nurse' or 'adopted,' are the children of people who can afford to pay large sums of money (£40, £50, and even £100) to get rid of their 'incumbrances' and hear nothing more of them."

It was resolved:—

That Mr. Curgenven's paper be printed and circulated for the use of the members, and that it be referred to the Standing Committee of the Department for consideration.

The following resolutions, prepared by the Standing Committee of Health, and, as amended, approved by the Council, were embodied in a memorial and presented to the President of the Poor Law Board:—

1. That no persons should receive children into their houses for hire, unless licensed and registered subject to the authority of the Poor Law Board.
2. That all such houses should be under the medical supervision of an officer specially appointed by the Guardians of the Poor for the duty.
3. That the nurse should pay a registration fee annually.
4. That no registered dry-nurse should take charge of more than two children under one year of age, and no foster-nurse should take charge of more than one under that age.
5. That the license of any nurse who, through neglect or incompetence, proves herself incapable of properly taking care of the children entrusted to her, should be withdrawn.

* Letter to the *Pall Mall Gazette*, July 2, 1870.
† *Sessional Proceedings*, 1868-69, pp. 316-332.

HEALTH OF EALING.—The Medical Officer of Health for the District of Ealing in his annual report for 1888, just published, gives the death-rate at 10·9 per 1,000, and the average for three years at only 11·5 per 1,000. It will be difficult to find a parallel case to this. Certainly Ealing stands in the front rank if not first amongst the districts of greater London.

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DEFECTS IN PLUMBING AND DRAINAGE WORK.

BAD work in all trades is more or less directly prejudicial to health. This is true as a general proposition; but defects in domestic plumbing and drainage are, in a very special manner, dangerous, sometimes actually causing death, and almost always causing or predisposing to disease. Such defects are due to three causes: ignorance, negligence, or deliberate wrong doing. The blame attaching thereto is usually supposed to be due to the artisan and his master, and the master's employer, the architect. Is not the householder also blameworthy? Does he not often move his family into a house without any inquiry regarding the sanitary arrangements, the position and condition of the drains, the essential requisites in the appliances the plumber supplies, or the difference between good and bad work, and good and bad fittings, &c.? Is it probable that a man like this will be well served? If thus careless himself, can he reasonably expect the experts, and tradesmen, and mechanics, who minister to his needs, to be intelligent and well-instructed, and scrupulously careful and honest?

Much has been heard about plumbing reform lately, and much has been done. The movement

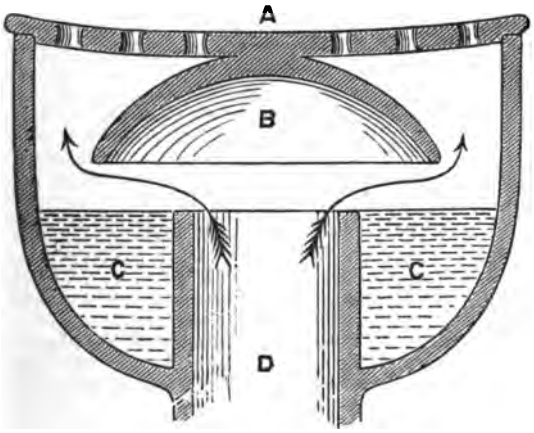

FIG. 20.

has begun from within. The master plumbers and operatives are themselves setting their house in order; but if the work thus auspiciously started is to make efficient progress, and do the good it designs to do, it must receive the intelligent support of the public. Unfortunately, the public, as represented by the British householder, is incapable of affording this support. What does the average householder say when the topic of improved plumbing is referred to? He believes that "those plumbers are awful fellows, and do everything wrong," and that the wrong doing "leads to fevers and sore throats and horrible smells, and all that sort of thing." This represents the wholesale ignorance of the educated householder—the uneducated cannot know less. If pressed and told it is his duty to obtain more precise information on the subject, he possibly asks where it is to be had.

We would refer all such inquirers to a most useful little book, entitled, *Defects in Plumbing and Drainage Work*, by Mr. Vacher, Medical Officer of Health, Birkenhead, just issued by Mr. Heywood, of Manchester. It furnishes a very exact and complete answer to the question, What is bad plumbing? It is printed in a neat clear type, profusely illustrated, handsomely bound in cloth, and only costs one shilling. It is divided into eight sections, and under each section are grouped examples of badly executed work, all carefully described with pen and pencil by the author, who has long taken an active interest in the subject.

The following examples, selected at random, will give a slight idea of the dangers to which the householder's child-like ignorance of sanitary matters exposes him.

Fig. 20 shows a typically bad bell-trap discovered in the scullery of a house rented at £30. It will be seen that the whole apparatus is simply a pretence, the depth of the bell at the centre being barely ½ in., and the distance between the bell-rim and the surface of the water being just ¼ in. On the same day, in the same street, a sink bell-trap examined in another house, was found to have the depth of the bell at the centre only ⅜ in. These were not traps, the bells of which had partly corroded away by means of the action of water on iron, but nearly new traps, *absolutely useless when fixed.*

Fig. 38 shows how a bath in a large house was made to empty itself into the cistern. In this

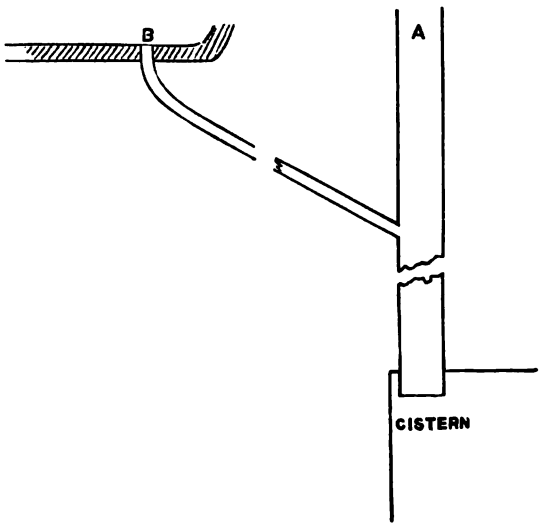

FIG. 38.

instance the outlet from the bath was connected with a rain-water pipe leading directly into a cistern.

Fig. 57 deserves special attention. Notice was received of a case of typhoid fever in a very old house in a poor neighbourhood. On examination the closet was found to enter from a small landing on the stairs, between the ground floor and the first floor. On looking to see what was under this (on the ground floor), a sink stone and a tap from the main were found. Immediately over the sink stone was the lead trap from the closet, and a transverse portion of soil pipe connected therewith, which was carried through the back wall into the house. In the soil pipe, close to the trap, was a corroded hole (immediately over the sink). Through this hole foul gases must often have been discharged, and foul liquids from the closet must often have overflowed. The illustration indicates how easily a jug of water drawn from the main tap might be polluted by foul liquid dropping into it from the hole in the soil pipe.

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Fig. 93 represents a wash-house, the floor of which was freed from water by means of a short iron pipe connected with the drain. This iron pipe was fitted with a brass cap which screwed on. After the

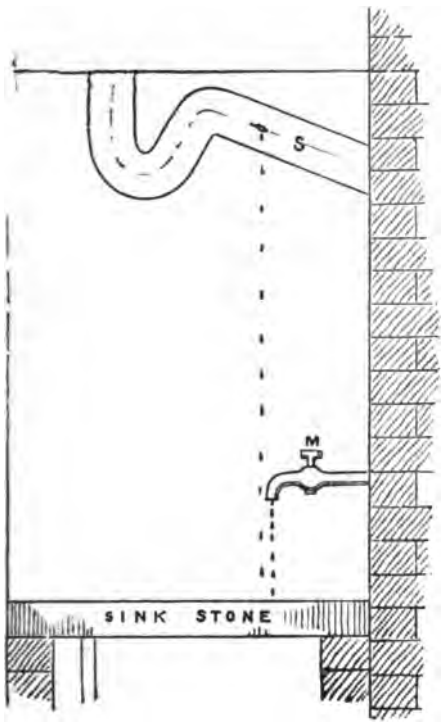

Fig. 57.

washing was over for the day the cap was screwed off and the tubs emptied, and then the cap screwed on again. Of course, in practice, the cap was not always screwed on at once; and one night that it

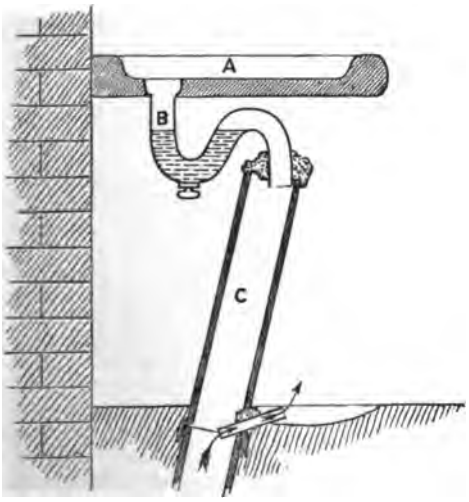

Fig. 93.

chanced to be left off, the effluvia nuisance was so bad as to cause the woman of the house to get up and search for the cap and put it on.

This is not a collection of possible mistakes which it is considered likely or probable that plumbers might make, nor is it a gathering of legendary blunders recorded in old books, or trumped up stories current in the trade. On the contrary, this little volume contains nothing but really modern instances of bad work, the whole forming a true record of contemporary defects, noted and vouched for by trained observers during the last four years. Certainly no more useful or suggestive book of the kind has been issued from the press. Though it is in the first place formally addressed to householders, it will prove specially useful to medical officers of health, sanitary inspectors, plumbers, those who contract to do plumbing and drainage work, teachers of plumbing, and their pupils.

Mr. Vacher is a skilful draftsman as well as a keen observer, and the sketches are particularly clear and useful. Many of the illustrations originally appeared in the *Health Journal*, but their collection and rearrangement with explanatory notes gives the present work all the value of a new production.

Cremation in Finland.—A cremation society—the first of its kind—has been formed in Finland, and as soon as it has been recognised by the authorities, a crematorium will be erected.

Foundlings in Russia.—According to official statements relating to the Russian foundling hospitals at St. Petersburg and Moscow, about one million newly-born children have been given over to them during the last hundred years, most of them illegitimate. Of this large number nearly eight hundred thousand have died in the first months or first years of their existence! The well-known authority on statistics, Alexander von Oettingen, who in his "Moral Statistics" has treated of the state of things in these Russian hospitals, satirically calls it "chronischer Kindermord auf Staatskosten" ("chronic infanticide at the cost of the State"). It is now asserted that the Russian Government intends to carry out a radical reorganization of both hospitals. Probably, says our St. Petersburg correspondent, a number of smaller foundling hospitals will be established in the provinces to take the place of the two large central hospitals, which now receive about 30,000 infants annually.

The Housing of the Poor.—Mr. R. T. Reid, M.P., recently addressed a public meeting at the rooms of the West Southwark Liberal and Radical Association, Southwark Bridge Road, on the subject of the housing of the working classes. Mr. E. H. Bayley (Liberal candidate for North Camberwell), presided. Mr. Reid, M.P., said he regarded the chief difficulty in this question as a matter of rent, and what they wanted to do was to see how they could provide decent dwellings at a rent which people could really pay. If they could do that they would solve the difficulty. Some people thought the difficulty might be met by a mixture of private charity and enterprise, but in his opinion private enterprise was perfectly ridiculous in a matter of this kind, because in the first place it must be very limited, and, secondly, because in a great city like this, the dwellings of the poor ought not to be dependent upon people going about administering relief. He was in favour of putting this matter in the hands of the County Councillors, who appeared to be a far more liberal-minded body of men and might very well be a far more intelligent body of men than the House of Commons as at present constituted. He would give the County Council powers to buy, build, and let, and would make a penny rate upon the rents received in respect of London, which would bring in from £120,000 to £130,000 a year, and which would be sufficient to guarantee the County Council against any loss they might incur in an operation of this kind.

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THE STATISTICS OF ENGLISH WATERING-PLACES AND HEALTH RESORTS.

We are glad to be able to publish, as last year, authentic statistics relating to the health of English watering-places during the last twelve months. The appeal we made in 1888 to the medical officers of health of the various urban sanitary districts comprising the principal watering-places, inviting them to co-operate with us in securing really trustworthy statistics of the various health resorts, was most promptly responded to, and we were enabled to publish information relating to a large number of watering-places in our issue of August last. This date, however, is certainly too late in the season; and as the value of the information would be greatly enhanced by its appearance at an earlier date, we this year publish it a month sooner, and take this opportunity of tendering our sincere thanks to those medical officers of health who have so promptly replied to our request to them to forward the desired information at so short a notice. These statistics are tabulated in the accompanying table, and show most satisfactory results. The mean rate of mortality for the year ending June last in the twenty-six watering-places for which the figures are given in the table was equal to 15·0 per 1,000 of their estimated population. In England and Wales the death-rate was equal to 17·4 during the same period, in the twenty-eight large towns to 19·0, and in the rural districts of the country to 16·0 per 1,000. The lowest rates during the year under notice in these watering-places were recorded in Clifton, Hastings, Sidmouth, Worthing, Weston-super-Mare, and Sandown. The highest death-rates were recorded in Leamington, Cheltenham, Bath, Shanklin, Penzance, Blackpool, and Yarmouth. With regard to the prevalence of zymotic diseases in the various health resorts, which is a matter of the greatest importance, it is satisfactory to notice that not a single death from any of the principal zymotic diseases was recorded during the year under notice in Exmouth, Ilfracombe, Shanklin, Sidmouth, or Matlock; and only one in Sandown and Weymouth. In the other towns the highest zymotic death-rates were recorded in Cheltenham, Lowestoft, Brighton, Leamington, Blackpool, and Yarmouth. The mean zymotic death-rate in the twenty-six watering-places dealt with in the table did not exceed 0·9 per 1,000, which was 1.0 below the general zymotic rate in England and Wales, and as much as 1.7 below the rate in the twenty-eight large English towns during the same period. Among the various watering-places the highest proportional fatality of measles was recorded in Leamington, of diphtheria in Blackpool, and of "fever" in Cheltenham and Blackpool. No fatal case of small-pox was registered during the year under notice in any of the watering-places dealt with in the accompanying table.

Mortality in the principal English Watering-Places during the Year ending June 1889.

Watering-Places.	Estimated Population 1889.	Total Deaths.	Annual Rate per 1,000 living.		Death from Principal Zymotic Diseases.	Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Whooping-cough.	Fever.	Diarrhœa.
			Deaths.	Principal Zymotic Diseases.								
Total of 26 Towns	620,283	9,093	15·0	0·9	546	—	76	19	61	104	78	208
Seaside Towns.												
Aberystwith	8,500	118	13·9	0·8	7	—	—	2	—	4	1	—
Blackpool	21,000	376	17·9	2·0	43	—	5	2	14	5	9	8
Brighton	121,807	1,797	14·8	1·1	129	—	16	8	14	22	10	59
Dawlish	4,300	67	15·6	0·9	4	—	—	—	—	3	1	—
Exmouth*	7,000	58	16·6	—	—	—	—	—	—	—	—	—
Folkestone	23,000	321	14·0	0·8	19	—	—	—	4	—	2	13
Hastings and St. Leonards	57,176	670	11·7	0·3	17	—	—	—	4	3	1	9
Ilfracombe*	6,960	50	14·4	—	—	—	—	—	—	—	—	—
Littlehampton	4,250	61	14·4	0·7	3	—	—	—	—	1	—	2
Lowestoft	23,220	356	15·3	1·0	23	—	1	1	2	6	3	10
Penzance	13,122	230	17·5	0·3	4	—	1	1	—	—	—	2
Sandown	3,450	46	13·3	0·3	1	—	—	—	—	—	—	—
Shanklin	3,500	61	17·4	—	—	—	—	—	—	—	—	—
Sidmouth	4,000	48	12·0	—	—	—	—	—	—	—	—	—
Torquay	25,000	349	14·0	0·3	7	—	4	1	—	—	1	1
Weston-super-Mare	17,000	216	12·7	0·6	10	—	1	1	—	1	3	4
Weymouth*	14,079	97	13·8	0·1	1	—	—	—	—	—	—	1
Worthing	14,100	172	12·2	0·4	5	—	—	1	1	3	—	—
Yarmouth	49,614	945	19·0	2·3	115	—	16	—	3	0	18	72
Inland Towns.												
Bath	51,790	896	17·3	0·5	25	—	3	—	1	15	6	—
Cheltenham	47,000	790	16·8	1·0	49	—	—	—	1	19	16	13
Clifton	30,776	325	10·6	0·7	23	—	7	1	1	4	5	5
Harrowgate	12,500	172	13·8	0·5	6	—	—	1	—	2	1	2
Leamington	24,665	412	16·7	1·5	38	—	16	—	9	7	1	5
Matlock	4,690	74	15·8	—	—	—	—	—	—	—	—	—
Tunbridge Wells	27,784	386	13·9	0·6	17	—	6	—	7	3	—	1

* The figures for this town relate to the six months ending June 30, 1889.

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THE

SANITARY RECORD.

The Organ of the Association of Public Sanitary Inspectors of Great Britain.

JULY 15, 1889.

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The Editor will be glad to receive, for publication, announcements of meetings, reports of proceedings, and abstracts or originals of papers read at meetings of Medical Societies of Health, Public Analysts, and Sanitary Inspectors' Associations, &c.

Medical Officers of Health, Public Analysts, Town Clerks, Local Board Clerks, Sanitary Surveyors, and Inspectors, are requested to send Notices of Appointments and Vacancies to the Editor, care of Messrs. W. H. ALLEN & Co., 13 *Waterloo Place, S.W.*

THE SANITARY RECORD will in future be published by Messrs. W. H. ALLEN & Co., 13 Waterloo Place, S.W. All matters relating to the literary portion of the Journal, and all exchange journals, periodicals, books for review, and new inventions, should be addressed to the EDITOR at above address. All business communications relating to Advertisements, Subscriptions, &c., to be addressed to the MANAGER, at the same address.

FURTHER POWERS FOR COUNTY COUNCILS.

THOSE who wish to see the powers of the County Councils enlarged should be satisfied with the Bill recently introduced into Parliament by Mr. Ritchie. The tenth section of the Local Government Act of last year enables the Local Government Board from time to time to make provisional orders for transferring to County Councils any administrative powers of Government departments, which are conferred by, or in pursuance of any statute, and appear to relate to matters arising within the county. A provisional order has accordingly been made for the purpose of transferring various powers now exercised by the Home Secretary, the Board of Trade, and the Local Government Board. The Bill confirming this order has just been introduced in the House of Commons, and, unless some quite unexpected opposition should be raised, will become law during the present session, so as to allow of these powers being transferred as proposed on the 1st of September next.

The powers thus to be transferred are decidedly miscellaneous, and somewhat difficult to classify. Companies and local authorities are now able to obtain provisional orders empowering them to construct and maintain works for the supply of gas and water in districts where there is no company armed with Parliamentary powers for those purposes, and similar orders authorizing tramway undertakings may also be obtained; the power to grant these orders is for the future to be enjoyed by the County Councils, instead of by the Board of Trade and the Local Government Board. The County Councils are also for the future to decide questions as to the abolition or change of date of fairs and markets, and in case of tolls levied in markets by urban sanitary authorities are to give their approval. There are other general powers, such as that of making regulations as to the allowance of expenses to members and officers of local authorities who attend conferences of different local authorities; the appointment of inspectors to decide whether bridges are fit to carry locomotives; of arbitrators to assess compensation payable under the Artizans' and Labourers' Dwellings Act, or of an umpire in disputes under the Public Health Act, where the arbitrators appointed by the parties cannot agree. The County Councils are also for the future to have the power of revoking licences granted by local authorities for the use of steam whistles if requested to do so by any person who is prejudicially affected by such licence.

The above powers, though important, will probably not often require to be exercised. We now come, however, to numerous provisions relating to sanitary matters which will require constant attention from the County Councils, or at any rate from some competent and permanent official employed by them. They, instead of the Local Government Board, are in future to require local authority when necessary to cleanse any streets in their respective districts; where a local authority makes default in taking proceedings for the suppression of nuisances, they may authorize any police officer to institute such proceedings; and they may require a local authority to provide a mortuary or a cemetery for its district. (It will be noticed that the power given to the Local Government Board by Section 299 of the Public Health Act, to interfere in other cases where a local authority has failed to do its duty, is not transferred). County Councils also get considerable powers for the regulation of water supply by local authorities, and for determining what is the reasonable cost of such supply. They also are made arbiters as to the propriety of the sewage system established by local authorities, at any rate as regards the junction of the systems of different districts in the county. Disputes as to the boundaries of sanitary districts (which are intended not to overlap county boundaries) are to be settled by the County Councils, and they may unite two or more sanitary districts for the purpose of appointing a medical officer of health. They also are for the future to confer urban powers on rural sanitary authorities, where they deem it expedient to do so.

The above powers, and others which need not be mentioned in detail, will add considerably to the work of the Councils if they are to be used effectively. Any doubt, which some councils seem hitherto to have felt, as to the propriety of at once appointing a duly qualified medical officer of health should now be at an end. The sanitary powers at first given to the County Councils were few, and some councillors probably thought they were not such as to justify the payment of a salary sufficient to secure the services of a competent officer. Now, however, that the County Councils are to have the control and supervision of the sanitary authorities in their counties, it will be essential that they should have proper professional advice. Doubts may well be entertained as to the fitness of the County Councils to undertake duties which have hitherto been discharged by Government departments, administered by officials trained up in the work they had to manage. If the Councils attempt to discharge their new duties unaided, they will certainly fail to discharge them satisfactorily. In any case

some of these duties seem to relate to matters of detail, which cannot be effectively regulated by a large popular assembly, and must necessarily be relegated to a small committee. The experiment of enlarging the functions of the Councils in the way now proposed is full of interest, and it remains for the members to justify the confidence thus reposed in them.

THE JUDGMENT IN THE TUBERCULOUS MEAT CASES AT GLASGOW.

It is almost impossible to over-estimate the importance of the decision given in Glasgow last month with reference to the test cases brought before Sheriff-Principal Berry. For sanitary authorities and their responsible advisers, the question which has been decided for them may be stated as follows:—

Is it right and reasonable to condemn a whole carcase on the evidence of tuberculosis being present, however limited in extent? Hitherto, it is no exaggeration to say the practice all over the three kingdoms has been to pass carcases in which the disease was regarded as localized, and to refuse to pass those carcases in which the disease was believed to be generalized. Thus, in Mr. Vacher's well-known articles on "The Physical Appearances of Sound and Unsound Food," which appeared in THE SANITARY RECORD in October and November 1885, and were reprinted as a little hand-book for the guidance of meat inspectors, the rule is laid down under the heading, *Pearl Disease or Grapes*. "Carcases are not ordinarily condemned merely owing to the presence of pearls. When the disease is of old standing, and there are distinct cavities in the lungs and pus in the glands, and much wasting and dropsy, the whole carcase should be regarded as unfit for human food."

This fairly expresses the practice of the best authorities in all our large urban centres, at all events up till very recently. Indeed, the evidence given in the inquiry for the defence, shows that Dr. Septimus Gibbon, of Holborn, Dr. Hill, of Birmingham, Dr. Goldie, of Leeds, and Dr. Mason, of Hull, still deal with tuberculous carcases as if they could be properly ranged under two classes, the wholesome and the unwholesome. Dr. Littlejohn, of Edinburgh, has modified his view in the matter of tuberculous meat, within the last few years, and so, we understand, has Mr. Vacher, and probably many other medical officers of health. Still, it has been left to Dr. Russell, of Glasgow, to endeavour to introduce a higher standard than that which has served hitherto, to advise his authority as to the new teaching with reference to tuberculosis, and to sweep away the old conventional views as to the difference between generalized and localized tuberculosis.

The Sheriff's carefully prepared written judgment is worthy of study, based as it is on the evidence submitted by the Local Authority and by the defence, the case on both sides having been presented with much intelligence and fulness. He found that both carcases involved in the cases were unfit for human food, and should be destroyed. Both were affected with tuberculosis, and although to the naked eye the disease was only local, it was, in point of fact, generalized. Tuberculosis was a human disease as well as a bovine disease, the bacilli were the cause of the disease, and it was proved that it could be communicated from animal to man; ingestion of tuberculous meat being one of the ways by which tuberculosis is communicated from the lower animals to man. "One need not look," writes the Sheriff, "further than to the practice of condemning the meat of tuberculous animals as hitherto practised in Glasgow and elsewhere, in order to see that the transmissibility of the disease by ingestion has long been recognized. Except on the footing that the meat was the medium of the transmission of the disease it would be unnecessary and wasteful to exclude from the food supply the carcases of animals which had suffered from tuberculosis, however generalized and extensive." The Sheriff is also quite satisfied, from the evidence, that the practice of stripping the chest walls, or "dressing" slightly affected carcases, "is not a sufficient protection against the risk of communication of the disease by ingestion. The disease may be in the flesh, although there is no appearance to the naked eye of the action of the bacillus." Finally, the Sheriff reviews the evidence on the insufficiency of the ordinary methods of cooking to destroy the bacilli, much less their spores. There was thus no alternative but to come to the conclusion that the old practice followed in Glasgow, and still obtaining in many large towns, is a practice attended with danger to the public health.

Fortunately, as the Sheriff points out, the food loss to Glasgow the new rule implies will be comparatively small (involving the additional condemnation of one carcase in four hundred); but whether the loss be much or little, the interests of public health should be regarded as paramount.

We think that any unbiased reader of the evidence* will admit that the Sheriff has arrived at the only possible logical conclusion. Still, after so many able medical men and health officers have for years past favoured the practice of condemning portions of a tuberculous carcase and passing the rest, it is a little surprising to find a lawyer seeing the scientific aspects of the question so readily and stating them so perspicuously.

COUNTRY HOLIDAYS FOR POOR LONDON CHILDREN.

THERE are in the elementary schools of London no less than 609,000 children under 13 years of age, and of these 17,637 secured last year a holiday of a fortnight's duration in the country through the beneficent action of The Children's Country Holiday Fund, which assumed its present shape in 1884, when several existing committees united with the object of forming a central society. The head office is at 10, Buckingham Street, Strand, and there are 35 branch committees in different parts of London. Each local committee is in communication with resident ladies and visitors in certain not very distant villages. The work of the London Committees is to select the children from the schools, preference being given to those who are delicate; that of the country visitors is to choose the cottage homes, make all the domestic arrangements, and watch over the children while in the country. A fixed weekly sum is paid for the maintenance of the child, towards which the parents contribute according to their means. Last year 17,637 children were sent away at a cost of £11,401, of which the parent's contributed £3,659. Special arrangements are made with the railway companies for reduced fares, and so economically is the Society managed, that the working expenses are only 3 per cent. of the total expendi-

* SANITARY RECORD, June 15, pp. 396-98, and July 15, pp. 25-6.

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ture. The limitation of funds is the sole limitation of its area of usefulness, and of the amount of pleasure and happiness it is able to confer on thousands of little ones. The sum of 10s. will give a poor little London child a fortnight in the country. Surely for the want of so small a sum no child should miss the holiday the Fund is willing to provide.

To check the exodus of the population from the country to the towns, and to reverse it by creating a taste for rural life, would be a happy result of the work of the Children's Country Holiday Fund. At all events it cannot but be good, both for their minds and bodies, to turn out our London children from the narrow streets and hot dingy alleys into the sweet fresh fields and lanes for at least a fortnight, to be guests in simple cottage homes, and we shall not be content till the funds are found to send the 600,000 children of our board and national schools away every year.

APPOINTMENT OF INSPECTOR OF NUISANCES.

THE 189th section of the Public Health Act requires urban sanitary authorities to appoint fit and proper persons to be their officers, amongst whom are to be a medical officer of health and an inspector of nuisances. These officers have power to do various things under different sections of the Act. Under Section 116 any medical officer of health or inspector of nuisances may at all reasonable times inspect and examine articles of food exposed for sale, and intended for human food, and may seize such articles as appear to him to be unsound, and have them condemned by a justice. The power to inspect and seize is only given to these officers, and it is necessary that they should be properly appointed, or proceedings which they institute will be invalid. A case heard last month before the Wigan magistrates (which is reported on page 39 of this number) shows this clearly. A butcher was charged with having exposed for sale the carcase of a pig, which was in a state of incipient decomposition and quite unfit for food. The state of the meat was not really disputed, and it was admitted that the defendant was the person who was responsible for attempting to sell it; but his advocate successfully urged that the person who seized it was not an inspector of nuisances within the words of the Act, and consequently was not entitled to make the seizure, and so secured his client's acquittal. It was shown that Leggatt, the inspector, was appointed by a resolution of the Corporation of Wigan, as their chief sanitary inspector, but his appointment was not under seal, and he was not in terms called inspector of nuisances. It was objected that he had no appointment authorising him to take proceedings under the Public Health Act. The magistrates gave no actual decision on the validity of these objections, but they evidently were impressed by them, for they persuaded the town clerk, who was conducting the prosecution, to withdraw the summons. That the appointment of a man as sanitary inspector is not in terms an appointment as inspector of nuisances is obvious; and the objection that a sanitary inspector is not a man clothed with the statutory powers of an inspector of nuisances seems to be a perfectly good one. The magistrates would therefore have been bound to dismiss the charge if it had not been withdrawn. The moral of the case is that it is important for local authorities to observe the titles prescribed by statute when appointing officers who are to exercise statutory powers. Probably the town councillors of Wigan thought they were complying with the Act when they resolved to appoint a sanitary inspector, but they now find that they failed to do so. We do not think that the omission to make the appointment under seal was fatal, as there are decided cases in which appointments of other officials by corporations have been held to be good, though made by parol; but it is essential that the man should be appointed to the proper office, otherwise he cannot properly discharge his duties.

WHY NOT LIGHT THE PARKS?

OF all the great cities of Europe London is the best supplied with parks and gardens in its very midst. Certainly the Bois de Boulogne is larger in extent than any of our parks and contains sylvan glades more shady and silent than can be found in Kensington Gardens, but then it is a journey to the Bois on foot, and one which is only undertaken seriously, and after due consideration of the cost or the fatigue involved. Our parks lie on the highway between one thickly-populated part of our city and another; and our gardens, the Botanical and the Zoological, are near at hand, though held at present as the monopoly of the few, and opened only by a golden key The parks are, however, public property, and it is a question which the County Council should seriously consider, how much more fully than at present they can be made available for the health, the recreation, and the rest, of the people of London. The English summer is short, but during June, July, August, and September more delightful weather and beautiful evenings can be enjoyed in England than in any other country. We should learn to catch these fleeting nights on the wing, and enjoy them thoroughly before the trials of a London winter, the fogs, and darkness, and East winds come to sour our tempers and cloud our lives. Have the illuminated gardens of the four successive exhibitions at South Kensington in 1883–87 taught us no lessons, and given us no precedent for the assurance that bands, lights, and summer evenings can be enjoyed to the full, and appreciated by the people of London? And will not the County Council lay these lessons to heart, and consider if it is not feasible and within their powers to apportion a part of each of the great parks of London to be used as a summer garden, lit in the evening with electric light, amply supplied with free seats and small tables, at which light refreshments could be partaken if desired, and where the workers of London could sit and rest, and enjoy the strains of a military band? There is no sight more strange or more melancholy than to see, on a hot August night, the well-lit streets thronged with a crowd of pedestrians moving hither and thither, seeking rest and finding none, and longing for fresh air, while beside these very streets lie the great parks, with their broad cool stretches of grass-land and their ample space, dark and deserted, and useless for all the purposes of humanity and amenity. What Continental cities have not found it impossible to do, surely we, with our great resources, can accomplish; and now that we have obtained Home Rule for London, and can make our wants and wishes known to our representatives, the scheme for making our parks out-door drawing-rooms for the people on summer evenings ought to be taken into consideration by the County Council, whose sole *raison d'être* is to make London the best possible place to live in.

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NOTES OF THE MONTH.

PUTRID CHEESE.

It is notorious that the sections of the Public Health Act dealing with the sale of unwholesome food are badly drawn, and not easy to work. The intention of Parliament was no doubt to prevent the distribution of unwholesome articles of food, which are likely to be detrimental to the public health, and to punish unscrupulous dealers who take advantage of their customers. Experience shows, however, that this intention is not always successful. Section 116 enumerates various articles which may be inspected and seized, if found to be diseased or unsound or unwholesome or unfit for the food of man; but, unfortunately, it does not follow the example of the corresponding section of the earlier Markets and Fairs Clauses Act 1847, where the general word "provisions" is used. The result is that a shopkeeper who sells articles of food which are not enumerated in section 116 of the Public Health Act escapes punishment under that Act. He may sometimes be reached by the sale of Food and Drugs Act, or the Margarine Act, but, as a rule, he is able to defy the law successfully. The last case in point occurred recently at West Ham, where Mr. Baggallay, the stipendiary magistrate, decided that a shopkeeper could not be punished for exposing for sale cheese which was unwholesome and quite unfit for food. This decision is in accord with a previous one given by the stipendiary magistrate at Manchester, that rancid butter is not an article which comes within the purview of the Act. The section mentions milk; but butter and cheese are so changed as to be different substances, and, as long as they are not adulterated, may apparently be sold with impunity, however tainted they may be. We know of no decision as to whether cream is included in the word "milk"; possibly a dealer in sour cream or even Devonshire cream may yet be convicted.

LIABILITY FOR DOG BITES.

The law as to liability of owners of dogs and other animals for injuries done by them seems not to be generally understood, and is considered by a considerable number of persons who do not understand it, to be unreasonable and unsatisfactory. There is a saying commonly current to the effect that every dog is entitled to one bite in the course of his life, but no more. Some people think that this is hard on the public who are liable to be bitten, and others sympathize with the dog whose appetite is thus stinted by law. The saying is in the main true, though it is not strictly accurate. If a man chooses to keep a ferocious animal, knowing it to be ferocious, he is bound to prevent it doing harm, and liable for the consequences of failing to keep it harmless. For instance, if he keeps a lion or tiger, or other beast which is ordinarily considered savage, and lets it be at large so that it can attack people, he is at once liable for the consequences, as he is bound to know that such animals are generally dangerous. But the majority of domestic animals are harmless enough, though individuals are not. This is true not only of dogs, but of horses, cattle, sheep, cats, and others which are kept for use or as pets. In the case of such animals, the owner is liable for injuries done by them if he knows them to be ferocious or mischievous, but not otherwise. Hence it is that the dog is entitled to his one bite. When he has once bitten or attempted to bite anyone, his owner, if he has become aware of the fact, can no longer consider his dog quiet and harmless, but is bound to prevent him from doing further harm. If he fails to do so, he becomes liable, but not before. He is in the same position as a person who owns a ram which he knows to be inclined to butt at people who come near it, or a horse which kicks out wantonly. But till he becomes aware that his animal is vicious, he is not bound to prevent its exercising a propensity which he does not know it to possess, and is not liable for failure to prevent it. People who are injured by an animal always think themselves aggrieved, if they cannot obtain compensation from its owner; so do people who are injured through the carelessness or mischief of a child or workman, if they cannot make the parent or employer responsible. But there are many cases in which no person worth suing can be made liable, and the public welfare does not demand that people who are themselves in no way to blame should be bound to pay for injuries which they have not caused. Dog bites are more common than injuries by other animals, and complaints of the unfairness of the law under which owners of dogs frequently escape from liability for their pets are not infrequent. A Bill is now before Parliament which proposes to alter this. Probably its chances of becoming law are remote. The question of the liability of owners of animals for injuries caused by them is one on which a good deal might be said, and it may perhaps be desirable that the law in this respect should be altered. Such an alteration should, however, only be made after full consideration, and if public opinion should become unanimous in its favour. At present we see no signs of any demand for it, and are content that the law should remain as it has been for generations.

SEIZING A LIVE CARCASE AND OBTAINING AN ORDER TO DESTROY IT AS UNSOUND FOOD.

It is not often that a live animal is seized and an order to destroy it obtained under the 116th and 117th clauses of the Public Health Act. It would appear as if some inspectors held that the words "animal carcase" in these clauses meant "carcase of an animal" instead of "animal or carcase." Indeed, the words would bear either meaning, there being no commas in an Act of Parliament. A case lately brought before the magistrates at the Police Court, Lincoln, shows that there is little difficulty in dealing with a live animal in this way, provided it be made clear that the animal is unsound and was intended for the food of man. The Chief Constable, in his capacity of Inspector of Nuisances to the Urban Sanitary Authority, seeing a lamb at the Fat Stock Market, which appeared to be diseased and unfit for food, seized the same and carried it away, and applied to the bench for an order to destroy it. The lamb was in a pen with some fat sheep, and about to be sold by auction. Mr. House, veterinary surgeon and inspector of markets, under the Contagious Diseases Act, said his attention was called to the lamb by the Chief Constable, and he saw it was in a very emaciated condition, and not an animal fit to be killed for food. It was desirable that the sale of such animals at the Fat Stock Market should be prohibited. Such animals when sold were killed and cut up for pies. Witness could not undertake to say that the flesh of the animal was diseased. Probably the illness was

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only temporary, the leanness being due to indigestion produced by some cause difficult to determine while the animal was alive. Certainly in its present condition the lamb was not fit to be offered for sale for human food. The policeman who actually made the seizure for the Chief Constable, said the lamb was in very poor condition, and the maggots had been at the back. Its back had been dressed with lime. Witness had never seen a lamb in such a condition before. A man, named Fox, said that he had been in the habit of sending "failing" sheep to the market. Recently he sent a sheep that could not stand. They were sold for what they were worth by auction in preference to being sold to the skinners. The lamb was his, and he was surprised that he had been found fault with for sending it; he had never been found fault with before. He saw that the lamb was losing its condition, and doing what he did was the best way to get rid of it. He expected about 4s. or 5s. for it, perhaps not so much. In his opinion the lamb was fit for human food, and he would dare eat it himself. If he got 4s. or 5s. for it, the skin was worth most of the money. In answer to the bench, witness said he had always sent to the Tuesday's market, and did not understand that was for fat stock only. He considered lambs fit to eat so long as they were alive and could get about. The magistrates having examined the lamb, the Chairman said they had not the slightest doubt that the lamb was sent to be sold for human food. The animal was entirely unfit to eat, and ought not to have been sent to the market. An order was accordingly made that the lamb should be destroyed, and the carcase buried. On the animal being slaughtered and examined by Mr. Howse it was found that the intestines were full of worms. An animal showing extreme emaciation from this or other cause was out of place in a fat stock market.

INCONTROVERTIBLE EVIDENCE.

THE Water of Leith Purification Bill was the other day being discussed by the Lord's Committee, consisting of the Duke of Westminster, the Earl of Arran, Lord Colchester, Lord Sherborne, and Lord Sandhurst, when, as evidence on behalf of the promoters of the Bill, two enormous hampers filled with little packets of "samples" taken from the bed of the river of Leith, were brought into the Committee-room. Dr. Littlejohn having stated that the condition of the stream was such as to create danger of diphtheria to the residents on its banks, Mr. Pember, Q.C., applied to the noble chairman for leave to remove the hampers, as he thought they were making their presence disagreeably felt. Mr. Balfour Browne, Q.C., asked "Is there risk of diphtheria from the time these hampers have been standing here?" Dr. Littlejohn replied "Undoubtedly." Thereupon the odoriferous hampers were immediately carried forth. the Duke of Westminster expressing the general opinion by saying, "We do not want them in again; that is evidence quite sufficient."

BURIAL FEES.

THE claim of the church trustees of the parish of St. Pancras to a share of the money paid by the London and North-Western Railway Company to the St. Pancras Burial Board, is noticeable for its audacity. The Burial Board has the management of the St. Pancras parish cemetery at Finchley, which has been provided for the parish in consequence of the old burial grounds having become over-crowded and consequently closed. The Burials Act of 1852 provides in such cases that the customary burial fees shall be paid by the Burial Board to the parties previously entitled to receive them, and the church trustees consequently receive fees in respect of interments in the new cemetery. The ground, however, has been used for another purpose than that of ordinary burial. The London and North-Western Railway had occasion to take their line through another burial ground in the parish of St. Pancras, and removed the human remains and earth from it to the cemetery at Finchley. For the reception of these remains they paid an agreed sum of £1,000 to the St. Pancras Burial Board, no part of it being expressed to be for fees. The church trustees, however, brought an action claiming the usual and customary fees on the re-interment of all the bodies so moved. Mr. Justice Kay and the Court of Appeal have both held that the action was ill-founded, and that the church trustees had no claim to any fees in this case. It is difficult to see how the decision could have been otherwise. We presume the claim will not be persisted in any longer.

WATER RIGHTS.

THE case of Brown *v.* Sandford, in which judgment was given by Mr. Justice Denman on June 7 last, and which is reported by us in this number, is one of considerable importance. The action was brought to prevent the defendant interfering with the flow of water from a spring situated on land which he had purchased in 1873, and was brought by several plaintiffs who claimed as individuals whose property was injured, and also as inhabitants of a village whose inhabitants were formerly in the habit of getting water from the spring. The spring had at all times within living memory issued from the ground in a continuous stream, and had flowed underground in a defined channel for a distance of at any rate 40 feet before reaching the surface. The inhabitants of the village of Cross and of two neighbouring hamlets took water from the spring for drinking and other domestic purposes whenever they required to do so, and went along a footpath to get there. The property on which the spring was situated was put up at auction in 1872, and some of the lots were then purchased; the defendant bought the lot on which the spring itself was situated subsequently. In 1874 he commenced quarrying operations on the side of the hill from which the spring issued, and gradually took the orifice farther back than it had been originally; and in 1884 he tapped the defined underground channel in which the water flowed, and so dried up the spring and took off all the water in pipes which he laid for his own convenience. Some of the plaintiffs in the action had by the conveyances under which they took their property express rights of way to the spring over the lands subsequently purchased by the defendant and rights of using the water. One of them also had a mill which was injuriously affected by the diminution of the body of water which reached it. They clearly, therefore, would have had a right of action against anyone who had interfered with these rights directly. But, inasmuch as the water was tapped in the ground before it reached the surface, the contention was raised that they had no legal cause of complaint. The argument in support of this defence was based on the well-known case of Cheesemore *v.* Richards,

in which the House of Lords decided that no one has any property in water flowing underground in undefined channels, and consequently that the owner of a well which had been dried up by the sinking of a deeper well in its immediate neighbourhood could not maintain an action for the damage which he thereby suffered. Mr. Justice Denman, however, distinguished the case before him from that, because the defendant had tapped the water while flowing in a defined though underground channel; and held him to have committed an actionable wrong in so doing. The distinction and consequent judgment in favour of the plaintiffs seem to be right, and show that individuals cannot always appropriate to themselves supplies of water in which other persons have vested interests.

EXPENSES OF URBAN POWERS IN RURAL DISTRICTS.

THE Court of Appeal on June 26 last decided a point of considerable importance to sanitary authorities and to ratepayers. It is well known that the powers of urban sanitary authorities under the Public Health Act are, in many respects, larger than those of rural authorities. Districts distinctly urban in their character are often, however, under the control of rural authorities, and power is therefore given by section 276 of the Act to the Local Government Board to declare any urban provisions to be in force in a rural district or contributory place, and to invest the rural authority with all or any of the powers, rights, duties, capacities, liabilities, and obligations of an urban authority, either unconditionally or subject to conditions to be specified in the order. This power is proposed to be transferred from the Local Government Board to the County Councils. An order was made under this section giving to the Bolton Rural Sanitary Authority urban powers for providing public lighting in certain contributory places within their Union. No special conditions were inserted in the order. The lighting was provided, and a rate to pay for it was levied. Section 229 of the Act provides that the expenses of a rural sanitary authority are to be divided into general expenses, payable by contributions out of the poor-rate according to the ratable value of each contributory place; and special expenses raised by a separate rate on the parish or place on which they are chargeable. In case of a rate for special expenses, certain property which is supposed to derive less benefit from the expenditure, such, for instance, as canals and railways, is to be assessed at one-fourth only of its ratable value, and, consequently, to contribute only one-fourth of the rate. In urban districts such property is entitled to the same exemption in respect of the general district rates; but in neither urban or rural districts is it more favoured than other property as regards payment of the poor-rate. The Bolton Union charged their lighting as a general expense, and consequently levied the money by a contribution from the poor-rate. The Lancashire and Yorkshire Railway Company objected to this mode of rating, and claimed to be assessed at one-fourth only of their ratable value. Their contention succeeded in the Queen's Bench Division, but failed in the Court of Appeal, who held that, as the order under which the urban powers were given to the Bolton guardians gave those powers unconditionally, the expenses of carrying out those powers were general expenses, and consequently the Railway Company were liable to pay the rate in full. This decision seems likely to affect many persons besides the parties immediately concerned, and makes it desirable for ratepayers to watch carefully all proposals to enlarge the powers of their local sanitary authorities.

A MILLER Prize has been awarded by the Institution of Civil Engineers to William Wade Fitzherbert Pullen, Wh.Sc., Stud. Inst. C.E., for his account of "Water-Softening and Filtering Apparatus, for Locomotive Purposes, at the Taff Vale Railway Company's Penarth Dock Station, near Cardiff," submitted during the session 1888–89.

AT a recent matinée given the other day at the Paris Vaudeville Theatre, for the benefit of the National Seaside Hospital Fund, the feature of the entertainment was a lecture by M. Jules Simon on the object of these hospitals or homes. It has been shown that scrofula is every year becoming more general in France. In several departments, Nièvre for instance, it has become an endemic, like goître in Switzerland. The best remedy known is sea air, and the promoters of the movement believe that if every poor scrofulous child were sent for a month to the seaside the result would tend to the regeneration of France.

BOTH SIDES OF THE QUESTION.—Somebody wrote to a Glasgow paper the other day, suggesting that in taking coast or country houses a certificate of the sanitary state of the house should be insisted on, but a correspondent in reply points out that there is as much need for those having houses to let to insist on certificates that the parties coming are in good health. It is a very common practice for those recovering from infectious disease to come to health resorts when recovering, and consequently when the danger of infection is greatest. Houses that are perfectly right from a sanitary point of view often get into bad repute on this account.

EXCESSIVE HEIGHT OF BUILDINGS IN THE METROPOLIS.—The Metropolitan Public Gardens Association has recently passed a resolution that it views with anxiety the continued construction now going on in London of numerous buildings of excessive height, and as the undoubted effect of this process will be to obstruct light and air, it is of opinion that the public right to these necessaries of life should be protected by legislation. In conformity with this resolution, Mr. Whitmore, M.P., has introduced the Building (Metropolis) Bill, giving power to the London County Council to restrict the height of buildings within its jurisdiction. The Association is glad to find that this Bill is now being considered by the Council, and hopes the public generally will support its efforts on this question by communicating with the members of the House of Commons with a view to the Bill becoming law this session.

THE report of the council of the Victoria Dwellings Association (Limited) states that the nett profit for the past year, to April 30, had been £2,099, compared with £1,788 for the previous year. This sum was increased by the balance brought forward to £2,283. Deducting £80, to be transferred to the replacement of leaseholds account, there would remain £2,203 available for this year's dividend, and they recommended a distribution of 2½ per cent., tax free, leaving £191 to be carried forward. The revenue derived from the buildings in the past year had been £8,538, or £172 more than in the previous year. The expenses, including interest to the Public Works Loan, and Ecclesiastical Commissioners, had been £6,441, or £139 less than for the previous year. The steady improvement in the lettings at Battersea and Stroud Vale, which the council stated in their last report had recently taken place, had been maintained. The death-rate in the dwellings of the association continued very low, showing that the sanitary arrangements were in a satisfactory condition.

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THE PUBLIC HEALTH

During June 1889.

The mean temperature during the month of June at the Royal Observatory, Greenwich, was 61°·4; it exceeded by 3°·2 the average June temperature in one hundred years, and was higher than that recorded in the corresponding period of any year since 1868. An excess of temperature prevailed on eighteen days during the month, while on the remaining twelve days it was below the average. The warmest day of the month was the 2nd, when the mean was as high as 69°·8, and showed an excess of 12°·1; the coldest day was the 10th, when the mean did not exceed 49°·7, and was 8°·9 below the average. Rain was measured on six days during the month under notice, to the aggregate amount of 2·1 inches, which slightly exceeded the average in sixty-one years. During the first half of the current year the rainfall has amounted to 11·5 inches, which exceeded by 0·7 of an inch the average amount in the corresponding periods of sixty-one years. The sun was above the horizon during 494·5 hours during June, and 195·4 hours of bright sunshine were recorded at Greenwich, which exceeded the average amount registered in the corresponding months of the ten preceding years. The wind was easterly almost throughout the month.

In the twenty-eight large English towns dealt with by the Registrar-General in his weekly return, which have an estimated population of upwards of twenty-eight and a half millions of persons, 22,785 births and 12,500 deaths were registered during the four weeks ending Saturday, June 29. The annual birth-rate, which had been 31·2 and 31·9 per 1,000 in the two preceding months, declined again to 31·1 during the month under notice, and was considerably below the average rate in the corresponding period of the seven preceding years, 1882–88. The lowest birth-rates last month in these twenty-eight towns were 20·4 in Huddersfield, 23·7 in Brighton, and 26·1 in Bradford; in the other towns the rates ranged upwards to 37·5 in Blackburn, 38·3 in Preston, 38·8 in Manchester, and 39·5 in Sunderland. In London the birth-rate last month was equal to 30·0 per 1,000, while it averaged 32·0 in the twenty-seven provincial towns.

The annual death-rate in the twenty-eight towns, which had declined from 20·8 to 17·9 per 1,000 in the three preceding months, further fell to 17·1 during the month under notice, and was 1·1 per 1,000 below the average rate in the corresponding periods of the seven preceding years, 1882–88. The lowest rate of mortality in these towns last month was 13·2 in Brighton. The rates in the other towns, ranged in order from the lowest, were as follow:—Nottingham, 14·2; Bristol, 14·3; Norwich, 14·6; Birmingham, 14·8; Portsmouth, 15·0; London, 15·2; Birkenhead, 15·5; Leicester, 15·6; Derby, 15·6; Bradford, 16·4; Cardiff, 17·2; Oldham, 17·3; Huddersfield, 17·3; Sheffield, 18·0; Liverpool, 18·4; Bolton, 18·8; Salford, 19·3; Blackburn, 20·3; Leeds, 20·4; Wolverhampton, 20·7; Plymouth, 21·2; Sunderland, 21·4; Newcastle-upon-Tyne, 21·9; Hull, 22·3; Halifax, 23·8; Manchester, 27·4; and the highest rate during the week, 29·7 in Preston.

The mean death-rate in the twenty-seven provincial towns was 18·6 per 1,000, while in London, as before stated, the rate did not exceed 15·2 per 1,000. The 12,500 deaths from all causes in the twenty-eight towns during the four weeks of June included 498 from measles, 437 from diarrhœa, 374 from whooping-cough, 173 from scarlet fever, 143 from diphtheria, 109 from "fever" (principally enteric), and one from small-pox; in all, 1,735 deaths were referred to these principal zymotic diseases, equal to an annual rate of 2·4 per 1,000, which corresponded with the average rate in the same period of the seven preceding years 1882–88. The death-rate in London last month from the principal zymotic diseases was equal to 1·7 per 1,000, while in the twenty-seven provincial towns it averaged 2·9, and ranged from 0·3 in Norwich, 1·3 in Derby, and 1·4 in Brighton, to 3·9 in Halifax, 4·3 in Manchester, 5·7 in Hull, and 10·8 in Preston.

Measles was the most fatal zymotic disease in the twenty-eight towns during the month under notice. The rate of mortality from this disease, which had declined in the three preceding months from 0·97 to 0·82 per 1,000, further fell to 0·68 during June, and was slightly below the average rate in the corresponding periods of the seven preceding years, 1882–88. In London the death-rate from measles was 0·38 per 1,000, while in the twenty-seven provincial towns it averaged 0·93, and was highest in Bolton, Leeds, Manchester, Halifax, Hull, and Preston. The rate of mortality from diarrhœa, which had increased from 0·18 to 0·22 per 1,000 in the three preceding months, further rose to 0·60 during the month under notice, and considerably exceeded the rate recorded in the corresponding period of any of the seven previous years, 1882–88. In London the diarrhœa death-rate was 0·45 per 1,000, whereas it averaged 0·72 in the twenty-seven provincial towns, among which this disease showed the highest proportional fatality in Leicester, Bolton, Manchester, Leeds, Preston, and Bradford. The death-rate from whooping-cough, which had been 0·69 and 0·62 per 1,000 in the two preceding months, further declined to 0·51 during the month under notice, and was below the average in the corresponding period of the seven years, 1882–88. In London the rate of mortality from whooping-cough was 0·35 per 1,000, while in the twenty-seven provincial towns it averaged 0·64, and was highest in Birkenhead, Wolverhampton, and Preston. The death-rate from scarlet fever, which had been 0·23 per 1,000 in each of the two preceding months, was 0·24 during the month under notice, against an average rate of 0·29 in the corresponding period of the seven previous years. In London the death-rate from scarlet fever was only 0·15 per 1,000, while it averaged 0·31 in the twenty-seven provincial towns, and was highest in Blackburn, Salford, and Plymouth. The rate of mortality from diphtheria, which had been 0·24 and 0·19 per 1,000 in the two preceding months, was 0·20 during June, and exceeded that recorded in the corresponding period of any of the seven preceding years, 1882–88. In London the diphtheria death-rate was as high as 0·30 per 1,000, while in the twenty-seven provincial towns it averaged only 0·11, and was highest in Manchester and Salford. The death-rate from "fever" (principally enteric), which had been 0·14 and 0·15 per 1,000 in the two preceding months, was again 0·15 during the month under notice, and was below the average in the corresponding period of the seven previous years, 1882–88. In London the rate of mortality from "fever" did not exceed 0·10 per 1,000, while it averaged 0·19 in the provincial towns, among which the highest proportional fatality of fever occurred in Portsmouth, Liverpool, Halifax, and Derby. The death from small-pox recorded during the month under notice was registered in Manchester. No small-pox patients were under treatment during last month in any of the Metropolitan Asylum Hospitals.

The rate of infant mortality in the twenty-eight towns, measured by the proportion of deaths under one year of age to registered births, was equal to 136 per 1,000, which slightly exceeded the average rate in the corresponding period of the seven preceding years. In London the rate of infant mortality did not exceed 119 per 1,000, while in the twenty-seven provincial towns it averaged 149, and ranged from 74 in Norwich, 95 in Brighton, and 100 in Derby, to 182 in Leicester, 186 in Huddersfield, 191 in Bradford, and 213 in Preston.

The death-rate from diseases of the respiratory organs, judged by the metropolitan returns, was considerably below the average during June. The weekly number of deaths referred to these diseases in London averaged 179, and the death-rate was equal to 2·1 per 1,000.

The causes of 275 of the 12,500 deaths registered in the twenty-eight towns during the four weeks of June were not certified, either by registered medical practitioners or by coroners. These uncertified deaths were equal to 2·2 per cent. of the total deaths, which slightly exceeded the proportion in recent months. In

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London the proportion of uncertified deaths was 1·1 per cent., whereas in the twenty-seven provincial towns it averaged 2·9 per cent. The causes of all the deaths during last month were certified in Portsmouth and in Plymouth, and only one was uncertified in Brighton, Norwich, Wolverhampton, and Sunderland; among the other towns the largest proportions of uncertified deaths were recorded in Preston, Halifax, Oldham, and Liverpool.

Among the population living in the outer ring of suburban districts around London, estimated at upwards of one and a quarter millions of persons, the annual death-rate from all causes during June did not exceed 12·3 per 1,000, and was considerably below the average in the corresponding period of the seven preceding years. During the four weeks ending June 29, 29 fatal cases of diarrhœa, 24 of whooping-cough, 21 of measles, 20 of diphtheria, 13 of scarlet fever, 11 of "fever," and not one of small-pox, were recorded in the outer ring; in all, 118 deaths resulted from these principal zymotic diseases, equal to an annual rate of 1·2 per 1,000. Compared with the preceding month the fatality of measles and of whooping-cough showed a marked decline. Of the 20 deaths from diphtheria, 4 occurred in Tottenham, 4 in West Ham, and 2 in Acton sub-districts; and the 18 fatal cases of scarlet fever included 7 which were recorded in West Ham sub-district.

THE DANGER OF ARTIFICIAL MANURES. — A farm labourer named Price, employed at Maghull, near Liverpool, has died from blood-poisoning contracted through handling artificial manure, which came in contact with a pimple on his arm.

ROUGH AND READY.—"I wish, Susan, that when you give baby a bath you would be careful to ascertain whether the water is at the proper temperature." Susan. —"Oh, don't you worry about that, ma'am. I don't need no 'mometers. If the little one turns red the water is too hot; if it turns blue it 's too cold, and that 's all there is about it!"—*Boston Commonwealth.*

AT Greenwich, Messrs. Wickens, Pease, & Co., of Trundley Road, Deptford, were summoned by the London County Council in two cases for breaches of bye-laws in carrying on the business of bone boilers. It was stated by Mr. Chaffey, inspector, that there were about 135 tons of bones on the defendants' premises, and the offensive smell in consequence of the doors being open was noticeable 150 yards off. The defence was that the bones had accumulated owing to the non-arrival of a barge. A fine of 40s. and costs was inflicted.

SANITARY PROGRESS IN NEPAL.—The Maharajah of Nepal has sanctioned the carrying out of the water-supply scheme for the city of Khatmandu proposed by Mr. Finimore. The cost of the work is estimated at about four lakhs. The water will be laid in cast-iron pipes from springs in the hills about four miles distant. The carrying out of this scheme will be a great boon to the inhabitants of the city, whose present water supply is drawn from shallow wells which are polluted to a frightful extent.

IN *Bulletins de la Société d'Anthropologie, tome onzième, serie iii.*, fasc. 4 (Paris, 1888), will be found a paper on the birth-rate in France, by M. Chervin. This paper contributes the most elaborate and detailed series of statistical tables, for the separate departments, of the births, marriages, and deaths registered, as well as of the numbers of children born in a definite number of households. The means obtained from these lists show that 8 per cent. of all the marriages in France are sterile, and that while 25 per cent. yield only one child, 100 families supply a mean of only 259 children. Many curious points of interest are suggested by this complex report, but it does not do much to explain the causes of the want of increase in the population of France, as compared with that of other countries.

NOTIFICATION OF INFECTIOUS DISEASES

IN 45 URBAN SANITARY DISTRICTS.

THE table on page 20 contains uniform statistics relating to sickness and mortality in forty-five of the fifty-six urban sanitary districts of England and Scotland in which the notification of infectious diseases is compulsory. The population of the towns for which we are enabled to publish complete statistics for the month of June is estimated at upwards of four millions of persons. The annual rate of mortality from all causes in these towns during the month under notice averaged 18·3 per 1,000, against 19·9 in each of the two preceding months. This death-rate exceeded by 2·8 per 1,000 the mean rate last month in twenty-eight of the largest English towns, which was only 17·1 per 1,000. The rates of mortality during the month under notice were considerably below the average in Willesden, Darwen, Dewsbury, West Ham, Reading, Barrow-in-Furness, and Burton-on-Trent; while they showed an excess in Macclesfield, Rotherham, Ashton-under-Lyne, Manchester, Burnley, and Preston. The death-rate from the eight infectious diseases dealt with in the table averaged 0·54 per 1,000, against 0·54 and 0·59 in the two preceding months. No deaths from any of these infectious diseases were registered during last month in Barrow-in-Furness, Bury, Guildford, Jarrow, Lancaster, Leek, Macclesfield, Ripon, Stalybridge, or Weymouth; whereas they caused the highest death-rates in Heywood, West Ham, Llanelly, Salford, Wakefield, and Accrington. Scarlet fever showed the highest proportional fatality in Salford, Llanelly, and Wakefield; diphtheria in Manchester and Salford; enteric fever in Derby; measles in Manchester, Rotherham, Aberdeen, Halifax, Jarrow, Preston, and Burnley; whooping-cough in Bury, Nottingham, Dundee, Bradford, and Birkenhead; and diarrhœa in Leicester, Manchester, Salford, and Ashton-under-Lyne. One death from small-pox was recorded in Manchester, but not one in any of the other sanitary districts. With reference to the notified cases of infectious diseases in these towns during June, it appears that the proportion of the population reported to be suffering from one or other of the eight diseases specified in the accompanying table was equal to 4·4 per 1,000, against 4·4 and 4·6 in the two preceding months. No case of any of these diseases was reported during the month under notice in Halifax or Ripon, and only one in Weymouth; and while the proportion did not exceed 1·0 per 1,000 in Bradford, Bury, Jarrow, and Reading, it ranged upwards in the other towns to 7·3 in Salford, 7·7 in Bolton, 8·9 in Portsmouth, 9·9 in Derby, 10·1 in Burnley, and 15·6 in Wakefield. Scarlet fever was proportionally most prevalent in Llanelly, Portsmouth, Warrington, Bradford, Burnley, Derby, and Wakefield; diphtheria in Portsmouth, Salford, and Willesden; and enteric fever in Salford, Accrington, Portsmouth, and York. Two cases of small-pox were notified during the month in Dewsbury, one in Darwen, and one in Portsmouth.

During the second quarter of the current year the rate of mortality in these urban sanitary districts was equal to 19·3 per 1,000, and exceeded by 1·1 the mean rate for the same period in the twenty-eight large English towns. With regard to the proportion of deaths to notified cases during the three months ending June last, it appears that the mortality from scarlet fever was equal to 7·5 per cent. of the cases notified; from enteric fever to 18·9 per cent.; and from diphtheria to 25·5 per cent. The proportion of deaths to notified cases of each of these diseases showed a decline from that accorded in the first quarter of the year.

THE report of the committee of officers appointed to investigate the condition of Clarence Barracks, Portsmouth, where enteric fever has prevailed, is said to be condemnatory both of Clarence and Gun Wharf barracks, which are directed to be closed.

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Table showing Sickness and Mortality in Large Towns of England and Scotland during the Month of June 1889.

Towns.	Estimated Population middle of 1889.	Small-pox.		Scarlet Fever.		Diphtheria.		Typhus Fever.		Enteric Fever.		Cholera.		Relapsing Fever.		Puerperal Fever.		Totals of Preceding Columns.		Annual Rate per 1,000 Persons Living.		Deaths from other Zymotic Diseases.				Total Mortality from all Causes per 1,000 Persons Living.
		Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Ill-defined Fever.	Measles.	Whooping-cough.	Diarrhœa.	
Aberdeen	121,448	—	—	8	—	2	2	3	—	—	—	—	—	—	—	—	—	13	2	1·3	0·2	1	27	1	3	18·4
Accrington	39,000	—	—	3	2	3	1	—	—	6	5	—	—	—	—	—	—	12	8	3·7	2·5	—	—	1	2	17·8
Ashton-under-Lyne	40,488	—	—	5	1	—	—	—	—	—	—	—	—	—	—	—	—	5	1	1·5	0·3	—	8	—	—	25·5
Barrow-in-Furness	50,000	—	—	3	—	1	—	—	—	4	—	—	—	—	—	—	—	8	—	1·9	—	—	5	—	1	12·7
Birkenhead	102,300	—	—	12	1	—	1	—	—	13	3	—	—	—	—	—	—	25	5	3·0	0·6	—	1	12	1	15·2
Blackburn	122,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Blackpool	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bolton	114,670	—	—	55	4	4	1	—	—	9	2	—	—	—	—	—	1	68	8	7·7	0·9	—	13	4	8	18·5
Bradford	235,056	—	—	13	7	3	2	—	—	1	—	—	—	—	—	—	—	17	9	0·9	0·5	—	28	20	23	16·4
Burnley	80,000	—	—	56	2	2	—	—	—	4	1	—	—	—	—	—	1	62	4	10·1	0·7	—	57	1	2	28·7
Burton-on-Trent	47,493	—	—	16	—	—	—	—	—	3	—	—	—	—	—	—	1	19	1	4·9	0·3	—	6	—	1	13·3
Bury	60,359	—	—	4	—	—	—	—	—	—	—	—	—	—	—	—	—	4	—	0·7	—	—	—	7	4	20·4
Chadderton	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Chester	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Croydon	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Darwen	34,500	1	—	12	2	—	—	—	—	—	—	—	—	—	—	—	—	13	2	4·7	0·7	—	3	2	1	8·7
Derby	98,525	—	—	85	2	—	—	—	—	8	4	—	—	—	—	—	1	93	7	9·9	0·7	1	—	2	1	15·5
Dewsbury	33,000	2	—	7	1	—	—	—	—	—	1	—	—	—	—	—	—	9	2	3·3	0·7	—	1	—	1	11·8
Dundee	163,300	—	—	19	1	7	3	1	—	14	1	—	—	—	—	—	—	41	5	3·1	0·4	—	1	17	10	15·9
Edinburgh	266,900	—	—	67	4	16	4	4	—	15	—	—	—	—	—	—	—	102	8	5·6	0·4	—	13	10	14·6
Greenock	78,248	—	—	24	—	2	2	—	—	3	—	—	—	—	—	—	—	29	2	4·8	0·3	—	—	1	3	15·1
Guildford	13,428	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	2	—	1·8	—	—	—	—	—	14·5
Halifax	81,200	—	—	—	—	—	1	—	—	—	1	—	—	—	—	—	—	—	1	—	0·3	—	18	—	1	23·3
Hartlepool	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Heywood	25,000	—	—	3	—	1	1	—	—	—	—	—	—	—	—	1	1	5	2	2·5	1·0	—	2	—	2	22·9
Huddersfield	92,825	—	—	32	—	—	1	—	—	2	—	—	—	—	—	—	—	34	1	4·8	0·1	—	9	1	2	17·4
Jarrow	31,000	—	—	1	—	—	—	—	—	1	—	—	—	—	—	—	—	2	—	0·8	—	—	14	3	3	22·3
Kngstn.-on-Thames	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Lancaster	27,740	—	—	4	—	—	—	—	—	3	—	—	—	—	—	—	—	7	—	3·1	—	—	1	—	—	18·9
Leek	13,700	—	—	1	—	1	—	—	—	1	—	—	—	—	—	—	—	3	—	2·7	—	—	—	2	—	18·7
Leicester	150,520	—	—	8	—	9	1	—	—	17	4	—	—	—	—	—	—	34	5	2·4	0·4	—	4	2	15	15·3
Llandudno	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Llanelly	22,828	—	—	9	3	—	—	—	—	2	—	—	—	—	—	—	—	11	3	5·9	1·6	—	—	—	—	14·4
Macclesfield	37,514	—	—	10	—	—	—	—	—	2	—	—	—	—	—	—	—	12	—	4·2	—	—	4	2	1	24·0
Manchester	378,800	—	1	141	10	26	8	—	—	23	2	—	—	—	—	—	1	190	22	5·2	0·6	—	78	19	37	26·9
Nelson	16,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Newcastle-on-Tyne	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Norwich	94,510	—	—	8	1	3	—	—	—	6	—	—	—	—	—	—	—	17	1	2·3	0·1	—	1	—	—	14·2
Nottingham	237,812	—	—	80	5	2	—	—	—	25	3	—	—	—	—	—	—	107	8	5·9	0·4	—	4	13	9	14·2
Oldham	142,405	—	—	35	2	—	—	—	—	1	1	—	—	—	—	1	—	37	3	3·4	0·3	—	7	11	6	17·3
Portsmouth	141,254	1	—	53	—	16	—	—	—	25	4	—	—	—	—	1	—	96	4	8·9	0·4	—	—	12	5	15·1
Preston	104,194	—	—	16	2	8	2	—	—	11	2	—	—	—	—	—	—	35	6	3·5	0·6	—	68	22	9	30·0
Reading	60,654	—	—	—	—	1	1	—	—	2	—	—	—	—	—	—	—	3	1	0·6	0·2	—	2	4	1	12·7
Ripon	7,670	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	17·5
Rotherham	36,482	—	—	9	—	—	—	—	—	1	1	—	—	—	—	—	—	10	1	3·6	0·4	—	8	—	—	25·4
Salford	234,283	—	—	70	19	30	7	—	—	31	6	—	—	—	—	—	1	131	33	7·3	1·8	—	4	5	27	18·3
Stafford	20,600	—	—	—	—	4	1	—	—	—	—	—	—	—	—	—	—	4	1	2·4	0·6	1	1	—	—	21·3
Stalybridge	27,938	—	—	8	—	—	—	—	—	1	—	—	—	—	—	—	—	9	—	4·2	—	—	4	—	1	18·2
Sunderland	134,193	—	—	37	2	3	—	5	—	12	2	—	—	—	—	—	—	57	4	5·5	0·4	—	2	6	8	21·5
Torquay	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Wakefield	33,360	—	—	36	5	2	—	—	—	2	1	—	—	—	—	—	—	40	6	15·6	2·3	—	—	5	—	21·5
Warrington	48,200	—	—	23	1	3	2	—	—	—	—	—	—	—	—	—	—	26	3	7·0	0·8	—	2	1	2	20·6
West Ham	180,000	—	—	44	8	12	4	—	—	6	1	—	—	—	—	1	1	63	14	4·6	1·0	—	2	5	4	11·8
Weymouth	14,008	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	1	—	0·9	—	—	—	—	1	14·7
Willesden	52,915	—	—	3	—	11	1	—	—	1	—	—	—	—	—	1	—	16	1	3·9	0·2	—	—	—	1	8·6
York	75,327	—	—	11	—	2	—	—	—	16	1	—	—	—	—	—	—	29	1	5·0	0·2	—	—	9	4	17·5

SPECIAL REPORTS, ABSTRACTS, &c.

BIRMINGHAM AND MIDLAND BRANCH OF THE SOCIETY OF MEDICAL OFFICERS OF HEALTH.

A MEETING of the above Society was held at the Council House, Birmingham, on July 4. There were present Mr. HOLLINSHEAD (Selby Oak), president; Dr. A. HILL (Birmingham), Dr. B. HILL (Birmingham), Dr. A. UNDERHILL (Ripon), Mr. H. MAY (Aston), Dr. PAGE (Redditch), hon secretary.

A paper was read by Dr. UNDERHILL on—

THE PTOMAINES, LEUCOMAINES, AND EXTRACTIVES—THEIR POSITION AS POSSIBLE ORIGINATORS OF DISEASE.

Dr. Underhill's excellent paper maintained the following propositions :—

1. That the class of animal and vegetable alkaloids is an important factor in preventive medicine.

2. That similar alkaloids are produced by bacterial agency, and without their agency.

3. That they are similar in composition to the alkaloids formed from vegetable matter.

4. That, however found, it is their action, by ferment or otherwise, on the blood constituents which cause the specific symptoms of the disease.

5. That it is probably this chemically-altered condition of the blood which gives a future immunity to the living being acted upon.

6. That they may be fixed or carried in vapours.

7. That it is not possible at present to definitely explain the connection between pathogenic chemical substances and pathogenic bacilli.

8. That the number of micro-organisms found in the mouth and intestinal tract favour the idea that "specific bacilli" are normally dormant in the system, and that they are only called into activity by the chemically altered condition of the blood, or that bacilli as pathogenic may be *post hoc* and not *propter hoc*.

9. That we cannot satisfactorily explain on the bacillus theory the decadence and expiration of an epidemic in the absence of preventive measures; there must be in addition an atmospheric condition, an epidemic influence to aid it.

10. That such "atmospheric influence" is more likely to favour chemical changes, and to intensify or retard an epidemic due to a chemical condition as a cause.

11. That the chemical or alkaloidal theory will satisfy on many points those observers who advocate autobiogenesis in disease.

Discussion followed, in which all present took part, the opinion of the meeting being decidedly against the alkaloidal theory.

Mr. MAY introduced to the notice of the meeting Mr. Ritchie's compulsory Notification of Infectious Diseases Bill. Without pledging itself to the approval of the details of the measure, on the proposition of Mr. May, seconded by Dr. A. Hill, it was unanimously resolved "That this branch of the Society of Medical Officers of Health approves of the principle of the Infectious Diseases Notification Bill by Mr. Ritchie, under notice of the House of Commons."*

THE NATIONAL ASSOCIATION OF SANITARY INSPECTORS AT YORK.

ON Saturday, June 22, the first general meeting of the National Association of Sanitary Inspectors was held at York. The members, numbering upwards of 70, were received in the Council Chamber at the Guildhall by the Lord Mayor, and thence adjourned to the theatre of the Museum, where the business of the Association was transacted.

Mr. T. PRIDGIN TEALE, F.R.S., the President of the Yorkshire Centre, occupied the chair, and the following Urban and Rural Sanitary Authorities were represented, viz.:—Leeds, York, Bradford, Wharfedale, Stokesley, Elland, Morley, Pudsey, Dewsbury, Meltham, South Crosland, Idle, Ovenden, Eccleshill, Ilkley, Bingley, Thornton, Keighley, Upper Soothill, Sowerby Bridge, Halifax, Middlesbrough, Scarborough, Tadcaster, Knaresborough, Darton, Derby, Altofts, Heckmondwike, and Drighlington. Mr. S. W. North, medical officer of health for York; Mr. John Newhouse, chairman of the Central Council; and Mr. Wilkinson, chairman of the Manchester Centre, were also present. Mr. Joseph Lindley, of Leeds, the hon. sec., having read the minutes,

Mr. JOHN NEWHOUSE, of Leeds, chairman of the Central Council, delivered the following address:—

"Gentlemen,—In the first place, allow me to congratulate you (which I do most heartily) on the amalgamation of the Yorkshire and Manchester Associations, under the title of the National Association of Sanitary Inspectors.

"One of the most important objects we have had in view since our formation has been the union of all sanitary inspectors; the old adage in "Union is Strength" still holds good, and if we intend to succeed in the completion of our object, we must use every endeavour to conciliate and induce all other kindred associations of sanitary inspectors to join us, or we join them, on equal terms, so that we may all be united in one body, and work in harmony together for the benefit of the whole.

The amalgamation of associations of sanitary inspectors.

"I should dearly like to see this accomplished, and earnestly request the favour and co-operation of all in endeavouring to carry out this most desirable object. I also request your assistance in formulating and carrying out other important measures which the council have in view for promoting the interests and raising the status of all sanitary officials.

"We are the servants of the public, appointed for the purpose of improving the health and welfare of our fellow-creatures by the removal of those evils which are prejudicial to health and procuring for them pure air, pure water, and pure food.

The duties of sanitary inspectors.

"This is our bounden duty, and to enable us to do it effectually we must avail ourselves of every opportunity of obtaining knowledge, and perfecting ourselves in sanitary science.

"On this point being attained by us, the question then arises, what further steps should be taken to educate the public to recognize the importance of our office and its duties as necessary to their welfare?

"I am of opinion that one of the best means of doing this is that adopted by the association—of holding meetings similar to this in various parts of the country; and by this means and the faithful discharge of the duties of our office, we should obtain the desired recognition. The public would then be with us, and deserving inspectors would be enabled to claim adequate remuneration for their services, and would also be assisted in securing tenure of office.

"Many inspectors throughout the kingdom have suffered and been disabled for life, whilst others have lost their lives through disease contracted in the execution of their duty, whereby they or their wives and families have been left destitute, their salaries being too small to allow them to make any provision for such a calamity, and there being no superannuation or compensation fund applicable to such cases.

"Now, it appears to me that the least we can do in this direction is to try and help ourselves by endeavouring to form a superannuation fund in the association, or take such steps as may be deemed necessary to bring the subject before the proper authorities.

Formation of a superannuation fund.

"Another important subject we should consider is that of forming a board of examiners in this part of the kingdom, either in conjunction with the Sanitary

* This Bill has been blocked.

Institute, the Owens College, or the Yorkshire College, for the purpose of granting certificates to persons who have a practical and not a theoretical knowledge only of sanitation, and who are, after examination, found to be fully competent to discharge the important and onerous duties of a sanitary inspector.

"A central council has been appointed, comprising members of the Yorkshire and Manchester centres; and at a meeting of that council, held in Huddersfield in May last, some of these subjects were discussed, and on the subject of superannuation it was deemed advisable to petition the Government to bring in a Bill for the purpose, or insert a clause in any proposed amendment of the Local Government Act, or in the future consolidation of the sanitary Acts; but I think our best course at present would be to feel our way quietly, and in the meantime to educate our members on the subject, with a view to obtain a consensus of opinion as to the best means to be adopted to secure the object in view.

"These, gentlemen, are subjects that demand your serious consideration, and I trust that you will all give them your earnest attention, and use your best endeavours to carry them out.

"I am glad to inform you that our position is most satisfactory as to numbers. We have now about 205 members, 62 honorary members, including 28 members of Parliament, and 13 associate members."

Mr. S. W. NORTH, medical officer of health, York, next read a paper on

"THE MILK TRADE AS AFFECTING THE PUBLIC HEALTH,"

which will be published in the SANITARY RECORD.

Mr. NEWHOUSE opened a short discussion, in which he expressed a general concurrence with Mr. North's paper, and emphasised especially the need for further legislation. He went on to suggest that sanitary inspectors who had not already had several years experience should be subject to an examination, and that a board of examiners should be formed in the North in conjunction with the Sanitary Institute, Owens College, and the Yorkshire College. Practical men—not men of theoretical knowledge only—should form the board, and be enabled to grant certificates to those who passed the examination. The certificates at present awarded were not of much value, for people without any practical knowledge whatever could obtain them.

Mr. DENHAM, of Tadcaster, inspector of dairies, cow sheds, and milk shops, said that his district sent milk to York, Leeds, and other towns. Before he took them over his duties were in the hands of the police, who had a systematic way of going round the country to inspect, but they had not called upon owners to make any structural alterations or to do many other necessary things. The present state of the law was also far too lax, and he concurred with Mr. North's recommendations. Great attention needed to be paid to the water supply on dairy farms, for he had known the closets, manure heaps, and water supply together near the cow-house.

Mr. GLEDHILL, of Heckmondwike, said that attention ought to be given to those who milked cows, for he had known men milk cows after a hard day's work with cracked and bleeding hands, from which corrupted matter issued.

Mr. WILKINSON, of Derby, asked if a sanitary inspector could look after everything that Acts of Parliament put upon him? In his opinion there ought to be a reorganization of the duties of sanitary inspectors; but on the other hand, though he favoured an examination and certificate recognized by the Government, it was not to be supposed that every one who passed an examination was thoroughly qualified.

Mr. SENIOR, of South Crosland, said, as an inspector of dairies and cow-sheds, that he had noticed the deficiency of light and air in many cow-sheds. Cows were tied by the head against solid stone walls, and breathed the same atmosphere over and over again. In places where these defects had been remedied the deaths amongst cattle were considerably less than in those where they existed. He urged the compulsory notification of any disease amongst cattle, and of the death of any animal, provision being made in the case of the latter that the carcase should not be moved till it was seen by the medical officer of health or the sanitary inspector.

The PRESIDENT said that it was only about twenty years since cases of diseases transmitted in the milk supply were first worked out, and he thought that the working out of the subject on various occasions was a most wonderful, delightful, and marvellous illustration of the way in which science was brought to bear upon the great question of the public health. Papers read at association meetings like that did a great deal towards the education of the public, and it must be remembered they could do nothing really until they could get public opinion sufficiently matured to see those things that science had found out. He valued Mr. North's paper most highly, and he was quite sure that they were all agreed that if Mr. North's recommendations could be carried out they would be of very great advantage to those who produced milk, for only dishonest persons would be affected by the proposed legislation. As to inspection of cow-sheds and dairies, he thought that if the matter was properly considered the work would become a special department of sanitary work.

Mr. NORTH, in replying, said that as an old medical officer of health he had great respect for sanitary inspectors. With regard to the subject before them, one great difficulty was that of dealing with poor people who sought to eke out a livelihood by dealing with that which they ought not to handle. There was an unwillingness on the part of corporations and other public bodies to disturb those people in their trade, but he believed they would eventually rise to a sense of duty, and that that sense of humanity, which was very creditable, would give way to a sense of the larger humanity—the health of the public at large.

The rules of the association were next submitted and approved, and several new members and associates were admitted.

An appeal was made on behalf of ex-Inspector John Malthouse, of Morley.

Hearty votes of thanks were accorded to the Lord Mayor for his reception; to Mr. North and Inspector J. Atkinson for the local arrangements; to the Yorkshire Philosophical Society; and to the President of the Association, the last-named resolution being submitted by Mr. North, who said that the fact of having so distinguished a man as Mr. Teale was a sufficient guarantee that the society deserved the support and sympathy of all classes.

Invitations for the next quarterly meeting were received from Sowerby Bridge and Harrogate, and the selection was left to the council.

The meeting then terminated, after which the members visited the various places of interest in the city.

PLYMOUTH COUNTY COUNCIL.

THE report of the Finance Committee of the Sanitary Authority to the Plymouth County Council shows that on comparing the income and expenditure of the past year with the estimate for the same period, whilst the receipts have been well maintained, the expenditure, more especially on highways and sewerage works, has been largely in excess of the estimated amount, and from this cause it arises that the year's account closes with a balance against it of £895 12s. The estimate for the current year shows an anticipated nett expenditure of £33,976 16s. 11d., to meet which a general district rate of 2s. 7d. in the £ on house property, and 7¾d. in the £ on arable land, &c., will be necessary, being an increase of 1d. and ¼d. in the £ respectively on the rate of last year. The loan debt of the Sanitary Authority now amounts to £124,830 7s. 8d., in addition to which it will

probably be necessary to borrow £20,000 during the current year in connection with street improvements, sewerage works, and pleasure grounds.

THE INFECTIOUS HOSPITALS OF LONDON.

Dr. Edward Seaton recently gave a lecture to medical men at the Sanitary Institute, on "The Infectious Hospitals of London as a Defence against Epidemics." He began by tracing the history of the present organization and the hospitals for dealing with cases of infectious diseases occurring in the metropolis, which he described as very complete, the accommodation amounting altogether to 4,000 beds, and, in addition, a very perfect ambulance system; patients being removed and comfortably in bed in the hospitals in about two hours after giving notice at the ambulance station. One difficulty that had to be contended with in the isolation of infectious hospitals was the atmospheric distribution of disease; and to provide against any difficulty that might arise when cases could not be conveyed to the present hospitals outside London, it was very desirable to establish in London a hospital arranged for passing through fire all the air coming from the building. With regard to compulsory notification, Dr. Seaton thought that in many towns medical men had reason to object to compulsory notification when the sanitary administration and hospital accommodation was not satisfactory, but in London he considered there was a very strong case in favour of compulsory notification. The present system had one disadvantage in withdrawing from the ordinary observance of medical students cases of infectious diseases, and he thought that some arrangement should be made for giving facilities for study in infectious hospitals.

A vote of thanks was moved by Sir Barrington Kennett, seconded by Mr. A. C. Scovell, of the Metropolitan Asylums Board.

THE RICHMOND (SURREY) WATER-SUPPLY.

Mr. C. H. Cooper, A.M.I.C.E., has recently delivered a lecture on this subject at the Richmond Athenæum, of which the following is an abstract.

Mr. Cooper, in commencing his paper, dwelt upon the vast importance, from a sanitary point of view, of obtaining a pure supply of water for large towns. In 1849, said he, when London was largely supplied with water from the Thames, Lea, Ravensbourne, and shallow wells —the points of intake being then within the Metropolis, and the water consequently much polluted—there was a cholera death-rate of 6·18 per thousand. In 1853–54, when some of the water companies were still taking water from below Teddington Weir, the cholera death-rate was 4·29. In 1866, when all had ceased doing so, and when the Kent Water Company derived its supply from deep wells sunk in the chalk, London lost 1·84 from cholera, and the area of intense disease was then confined to the districts furnished with a contaminated supply by the East London Company. The providing of a wholesome water supply was also rendered more difficult by the increased high manuring of agricultural land. The London basin, continued Mr. Cooper, is geologically composed of a series of strata, somewhat in the form of, and placed one beneath another like, a nest of Japanese trays. The central tray is partially filled with London clay. Three of these strata were "water-bearing"—*i.e.* sponge-like, and through them water could flow freely. They were the upper green sand, the chalk, and the Thanet sands, and impervious strata intervened between each. For present purposes the impervious gault might be taken as the lowermost tray or basin. On this rested the upper green sand; on this, again, the impervious chalk marl; and on this the most important of the London water-bearing strata, viz. the chalk. The outcrop of this—the edges of the tray coming to the surface of the ground—covered about 1,500 square miles, and the water falling over this area appeared to drain towards the Thames. Above the chalk was a thin bed of clay, and then the water-bearing Thanet sands, which were exposed in the road cutting through Sand Hill, Beddington, and elsewhere. On the Thanet sands rested the "Woolwich" and "Reading" beds of clay and sand intermixed, and on these the familiar London clay. The outcrop of the upper green sand and Thanet sands being limited, no great supply of water had been obtained therefrom. But the chalk, with its 1,500 square miles of outcrop, 450 million gallons were delivered daily to such natural springs as the Wandle Head, and to the several thousands of wells sunk in the London basin. The water in the central portion of such water-bearing strata was, of course, under considerable pressure from the higher parts of the same, and if a tube-well were sunk into such central portions of the stratum would rise therein until it approximated to the level of the lowest point where that stratum was overlaid by the superincumbent impervious stratum; and sometimes, in this way, overflowed the ground above. London's early well supply was obtained from shallow wells sunk into beds of sand and gravel overlying the London clay, as in Richmond Park, Wimbledon Common, and many more central spots. This had now ceased, through pollution, to be available for domestic purposes, being for the most part the result of surface drainage. They would next proceed, said the lecturer, to consider that great subterranean store, the overflows of which might be seen in the beautiful springs of Ewell, Carshalton, Teddington, and Croydon, discharging upwards of twenty-five million gallons of pure crystal water daily. Where did this come from, and why was the flow so constant? Let them walk for miles over the chalk hills, and they would fail, as long as they kept on the chalk, to find rivers or streams. What, then, became of the rain which fell on the chalk? It was absorbed, and flowed underground instead of on the surface, as where the surface stratum was more impervious, But the flow being much slower beneath the ground than above it, the chalk became an immense reservoir. Mr. Cooper then described the composition of chalk—the shells and skeletons of minute marine animalculæ, hardened into rock during long ages of hydraulic pressure at the bottom of the ocean, a process still going on in the Atlantic and elsewhere. By careful experiment it had been found that about two-thirds of the rainfall over the chalk district was lost by evaporation, and the remaining third percolated through the chalk. This represented a total annual percolation of 145 million gallons per square mile, or 217,500,000,000 gallons for the entire chalk outcrop area of the London basin. Each local spring was situated at the bottom of a depressed cone in the chalk and received the flow of free water, *i.e.* that remaining over and above what the chalk would hold in absorption. The farther that a well was sunk from such a spring, the greater was the variation of the rise and fall of the water therein, according as the flow was or was not compensated for by rain. Taking a section along the Caterham Valley from Croydon, the water at Marden Park was found to rise and fall 65 feet, while at the Croydon springs the difference was imperceptible. Where the highest water line in the wells of a chalk district was above the level of the ground, bournes or intermittent streams would break out from time to time after wet seasons, as occurred sometimes in the Caterham Valley. Going back again to the question of chalk water supply in districts where the chalk was overlaid by impervious strata, Mr. Cooper pointed out that in addition to the height of that impervious strata, there were other factors which affected the height to which the water would rise in tube wells. Firstly, the distance from the outcrop, with which increased of course the degree of resistance to the flow of the water. Secondly, the loss of hydraulic pressure due to neighbouring borings. From the well sunk at Tooting Church, in 1822, the water rose to 65 feet above ordnance datum, and

yielded 130 gallons per minute. Now, owing to the number of other wells sunk in the neighbourhood, it only rose to 60 feet, and yielded but 13 gallons per minute. Thirdly, barometrical pressure affected the yield; and there were still two most important factors to be considered. Even in the soft upper chalk beds of hard yellowish chalk occurred, which yielded little or no water, and the varying pressure of the superincumbent tertiary strata appeared to have a most important effect upon the yield from beneath. Thus, in the case of the Kentish Town, Meux, Streatham, and Richmond wells, where the depth of the tertiaries passed through was great, a small yield of water was obtained; while along the anti-clinal arch, nearly corresponding with the courses of the Lea and Wandle, where the chalk comes to within 200 feet of the surface, as a rule plentiful supplies are obtained. At the New River Company's well at Cheshunt, a fissure was met with in the chalk, which yielded three million gallons daily; but the striking of that was of course purely a stroke of good fortune. As in all other mining operations, "faults"—upheavals of intruding strata—interfered much with water supplies from the chalk. An important point in connection with chalk water was its hardness, *i.e.* the amount of certain salts of lime and magnesia, which it took up and held in solution, which rendered it, in a natural state, unsuitable for cleansing purposes, and which caused it to leave a deposit in pipes, kettles, and boilers. But by a chemical process, consisting of the application of quicklime, hard water could be very cheaply softened; 100,000 gallons of Thames water could be thus dealt with for 9d. Another important point, which would have to be dealt with by the Legislature, was the constant pollution of the chalk supply now going on by the increasing populations residing on the chalk outcrop. Few of these districts were sewered, the absorbent nature of the chalk allowing cesspools to be used for a very long time without needing to be cleansed. And as water was laid on to the houses in these districts from the companies' mains, their old wells were frequently converted into receptacles for bin rubbish and all manner of filth. At Brentford, a well so converted into a receptacle for sewage polluted another ninety yards away to such an extent that an action was brought in the Chancery Division to restrain. It was there decided "That the owner of such a well has the right to abstract from the common source of supply all the water, and has, consequently, the right to alter the quality of it." But the Court of Appeal reversed this decision, deciding that, "Although there is before appropriation no property in underground water, flowing in no defined channel, but percolating through the earth and forming the common source from which all may appropriate water by drawing it up through their own land; yet every owner of land under which such water percolates has a right to appropriate it, and has a right to have it in its natural condition, and no one is entitled to pollute that common source by using his land in a way which is not the exercise of a natural right incidental to the ownership of land."

Discussion.

The Chairman, Prof. Judd, observed that the history of the water supply of the Metropolis was very curious. As the population had grown they had had to go farther for their supply. When the English tribes which first visited that district came, they founded a stockade, and found the gravel an admirable medium through which came a water supply. But, unfortunately, that previous gravel was equally suitable for getting rid of sewage. Then a new source was found in the Thanet sands. They might sink a well into the chalk and get an abundant supply of water, or they might sink into the soil and have none at all. If the whole water required for London were drawn from the chalk, the level would be seriously low. In many valleys the source of supply would be cut off, and they would be rendered infertile; mills also would be stopped. By-and-bye the question of absorbing the whole of the water from the London basin would have to be settled in the law courts.

Mr. Cockram remarked that none of their water was filtered. They might also complain of the Southwark and Vauxhall Company taking their water out of the river. It was reckoned that there were at least 600 houseboats on the river, and they had been supposed to average five persons each, which would give a population of 3,000 persons infecting the water with sewage. Then Richmond had thought fit to deposit their sewage a mile higher up the river than the water was drawn out of it. Something like twenty tons a day were placed within 180 yards of the towing path. From these facts it might be judged whether the condemnation of their water supply was too strong.

Mr. Collet Homersham said Mr. Cooper very much condemned the use of the river water. It was no doubt true that the Conservancy never could make it pure enough for drinking purposes. It was a question whether they should not, like Manchester and Liverpool, go to some big lake for their supply.

Mr. Wakefield asked in towns supplied with water which had come through chalk, whether the inhabitants had not suffered from various diseases in consequence.

Mr. Gascoyne inquired whether they at Richmond got their water from the chalk or from the sand.

Mr. Rolfe was very much afraid they would not find water sufficient for their supply in Richmond. It was a great question whether they should not try the storage system to some extent. He thought, too, the Local Government Act would be of importance in enabling counties to combine if necessary in securing a water supply

The Lecturer, in answer to the Rev. C. F. Coutts, said it was a difficult matter to cut adits if they intended to go down to the chalk, because it was necessary to go through the sands. But he believed that difficulty had been partly overcome by freezing the Thanet sands while sinking, and so getting down through cylinders. In regard to getting a supply from the Wardle springs, the mill owners there were well organised, and there would necessarily be a stiff legal battle to face. The facts did not bear out Mr. Wakefield's fears about diseases arising from the use of water that had passed through chalk. Mr. Gascoyne was quite right; the whole of the tertiaries water was soft. Storage of water was very good in climates where rainfalls were periodical, but not, he thought, in a variable climate like England. Undoubtedly County Councils were a step in the right direction towards securing an effective water supply over a large area. He thought the principle might well be adopted in England that was common in France, where Conservancies had the control of a whole water shed, and not several bodies.

A cordial vote of thanks was, on the suggestion of the Chairman, passed to the lecturer for his able paper.

THE PURIFICATION OF SEWAGE.

A working trial of Messrs. Jagger, Son, & Turley's patent process at Halifax has been conducted at the sewage works of the Halifax Corporation at Salterhebble. Briefly, the process is as follows: A carbon filtering medium is obtained by reducing to a carbonized state dry ashpit refuse which contains a large proportion of animal and vegetable matter. The refuse is placed in a carbonizer, where it is allowed to remain until the whole mass is charred by a process of slow combustion. After the carbonized material is withdrawn from the carbonizer, it is riddled by means of a circular riddle; cinders and a small percentage of clinker are laid on one side for use in forming the bottom layers of the filters to be afterwards described. After the filters have been constructed the clinker and cinders will not be required, but may be utilized for making mortar, road repairing, or for filling up disused quarries, &c. The

finer grades given out by the riddle, composed principally of charcoal and a small percentage of ash, are placed as an upper layer of a shallow filter bed, about four inches in thickness. A small carbonizer has been erected at Halifax, and a filter of 102 superficial yards laid down. The filter is 2 ft. 6 in. deep, it has a 6-in. concrete bottom, and brickwork sides jointed in cement; the filter is divided by a 14-in. wall, underneath which is laid a channel for conveying away the effluent; the bottom course of brickwork of the central wall is open jointed to allow the effluent to pass from the layers of cinders to the channel. The filter bed is formed as follows: at the bottom is placed a 6-in. layer of rough material, which may be clinker or broken bricks or stone, above this layer is placed another composed of 1-in. cinders laid 3 in. thick, then follows a layer 3 in. thick of ¼-in. cinders, and finally a layer of carbon 4 in. thick, giving a total thickness of 16 inches. The filter is worked with a 6-in. head of sewage. The sewage is conducted on to the filter by a 6-in. pipe, having branches, the pipe being laid on the top of the central wall; under each branch is placed a floating splash board, which prevents the sewage washing a hole through the filtering material. The sewage flows over and through the carbon. The effluent is clear, inodorous, and colourless, and proved by analysis, made by Dr. Burghardt, of Manchester, for the Whitefield Local Board, who are trying the system, to be very pure. The organic matter in suspension was 417·2 grs. per gallon in sewage, and 1·12 grs. per gallon in effluent. The albumenoid ammonia in solution was also reduced from 0·280 grs. per gallon in sewage to 0·007 grs. per gallon in effluent. The manner of dealing with the sewage is as follows: Across the outfall sewer are placed a series of wirework baskets filled with cinders of different grades to arrest the grosser floating solids. The sewage then flows on to the filter bed where the purification of the sewage is accomplished. No chemicals whatever are used. The filter beds will work at a rate of from 240 to 300 gallons per superficial yard per day, according to the density of sewage treated. An acre of filtering surface will be ample for dealing with the sewage from 30,000 persons, or say 1,000,000 gallons per day. The land required for this process is only $\frac{1}{200}$th part of that required for broad irrigation, or $\frac{1}{40}$th that required for combined precipitation and filtration. The capital cost for this process will be about £70 per 1,000 inhabitants up to a population of 50,000, and the annual working expenses for collecting and disposing of refuse and purifying sewage, inclusive of interest on capital and royalty fees, about 8d. per head of population. This process solves the sludge difficulty; no chemicals being used no weight is added to the solids in the sewage; the grosser solids are arrested in the cinder baskets, and the finer solids are deposited on the top of the filters in the form of a thin skin. After a filter has worked for 24 hours the flow into that particular filter is stopped, the moisture allowed to drain off, and the deposit removed by a scum plough, a little fresh carbon is laid, and the filter is then again ready for work. By a simple mechanical contrivance a filter of 100 yards can be cleansed and recharged in ten minutes. The average weight of sludge made per 1,000,000 gallons of sewage treated by chemicals is 20 tons. In place of a semi-fluid offensive sludge, by the carbonized refuse process, we have a manure uninjured by chemicals, which can be carted away as it is removed from the filters, and which will equal in bulk 7½ tons per 1,000,000 gallons treated.

DOMESTIC SANITARY ENGINEERING.

Mr. Addiscott (cert. San. Inst.), one of the sanitary inspectors of the borough of Plymouth, recently delivered a very interesting lecture at Devonport on the subject of health, taking that branch of the question which deals with house drainage, ventilation, and water supply. Concerning the question of house drainage, he warned his hearers of the risk and dangers attendant upon masonry or wall drains and ill-constructed pipe drains. He remembered a case where pipes had been recommended as a new thing, but, rejoined the patron to the masons, "They are as new as Pompeii." Evidence also had been brought to light that the Romans and ancient Jews were as well up in pipe-drains and sanitary laws and requirements as the sanitarians of the nineteenth century. But from bad drains often sprang the more malignant types of disease, and it was therefore a question in which rich and poor, old and young, of either sex had an interest as well as in that of his next point—ventilation. Some of the organs of the body, the lecturer proceeded to say, were not always at work; such as the organ of motion, voice, &c., but others were never at rest, and one of the last named was the organ of respiration. Breathe they must; if they had bad or pure air they must take it in, either to their ill or their benefit. So they would see from this that they must get their air pure, and, to do this, means mechanical or natural must be adopted to drive out vitiated atmosphere. An illustration was shown as to how a person might get acclimatized to almost anything. A bird was placed in a glass globe with no means for fresh air. After some hours a fresh bird was put in, but died at the end of an hour, being suffocated. Bird No. 1, however, had grown used to it by graduation, and so did not succumb so soon. After pointing out how fresh air might be brought into rooms without draught, he passed on to consider water supply, giving several simple tests whereby housewives and others could form a rough idea as to the quality of water supplied. One very simple thing was that physically it should be free from taste, colour, smell, and leave no settlement when it had been allowed to stand for some time. Water that had come over or through a clay stratum should be looked at with suspicion. But water from granite strata was safe and generally pure, free from organic matter, unless added by outside agencies. Waters from lime strata were hard and expensive, for in London alone tons of soap were annually wasted, as the soap had first to act upon the lime before any lather could be formed. Spring, marsh, and other waters were dealt with, and dangers to pollution explained. The lecture was illustrated by means of working models of the Banner Ventilating Co., Boyles, Kershaw, and other sanitary firms.

Dr. W. J. Square (chairman of the Plymouth Sanitary Committee), who presided, paid Mr. Addiscott a high compliment for his lecture, which he described as both practical and interesting. He endorsed many of the lecturer's points, and laid especial stress on the necessity for keeping water cisterns perfectly clean, recommending the adoption of his own plan of painting on the outside of the cistern—"To be washed out on the 1st of the month." Closer attention to personal and domestic cleanliness, and the practice of temperance would make people almost independent of the doctor. Speaking on the ventilation of dwellings, he said that Tobin's ventilators were by far the best. A simple and easy application of the principle of the Tobin ventilation could be secured by the Hinckes-Bird plan, viz., fastening a piece of wood to the lower part of the window sash, so as to admit of the sash being raised a few inches without causing a draught.

In the course of an interesting discussion, Mr. Addiscott was asked his opinion of surface sewer ventilators as compared with shafts. He stated that he was not an authority on sewer engineering, but he did not believe surface ventilation was the best system.

Dr. Square said he was inclined to the opinion that surface ventilators were the most effective, provided enough of them were laid down. Shafts acted well when the sewers were practically closed, but that was a condition rarely or never secured. It was far better to have sewer gas escaping into the streets than finding its way into dwelling houses.

A vote of thanks to Mr. Addiscott for his lecture was unanimously adopted.

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THE VENTILATION OF SEWERS.

THE question of sewer ventilation has for some time been a subject of considerable discussion in many of the important towns and districts outside the Metropolitan Board of Works, and the City Commissioners of Sewers and Areas, and many schemes and experiments have been tried in order to find some rule upon which to work to ensure a perfect and simple means of sewer ventilation. But notwithstanding the talent and experience of many engineers and surveyors engaged in these trials, the fact remains that no rule has yet been found, and each district is left to find a remedy for itself. One thing, however, appears certain, and that is that what may prove an advantage to one district is a failure in another, and this appears to be caused by quite local circumstances. It is proved beyond doubt that the current of the gases in the sewers take varied courses, as, for example, the experiments in one district show that the current of air is from the upper end of a sewer to the lower, or outfall end, whereas in a second district the reverse is found to be the case. It has also been found that the currents of air become divided, and one part of a sewer has the air current towards the upper end, and the other portion the reverse. This is no doubt caused by the varied temperatures of the sewage, the temperature and humidity of the air, the inclinations of the sewers and the volume of sewage passing through, all of which, in combination with the size of the sewers, have a great effect upon the current of air passing through the pipe. Mr. J. W. Brumell, the engineer and surveyor to the Finchley Local Board, in a report to his Board, states that his observations lead him to believe that the most objectionable ventilators in his district are not those at the highest end of the sewer, but at the highest end of the ground in the district, and where, of course, the ventilators are the greater depth. This, he considers, a great argument in favour of high ventilating shafts, as causing a more rapid upward current, thus rendering the escape of sewer gas more certain. It must be borne in mind, however, as Mr. Brumell reminds the Board, that the sewage of this district is much stronger than the "standard" known as "London sewage," for, says Mr. Brumell, "here the bulk of rain-water is excluded from the sewers, so that no flushing other than by artificial means takes place, and, by reason of many of the existing old sewers being connected with the new system, there is a large amount of most abominable sewage; the overflow from cesspools, with the accompanying ready-made gas passed direct into sewers constructed only for the purpose of receiving fresh sewage, and thus causing the nuisance complained of." This is sufficient to account for the existence of the nuisance at present complained of. Mr. Brumell states that he saw the furnace sewer ventilator in use at Brighton, and was much impressed with its efficacy for sewers having but few openings in them. This furnace ventilates about seven miles of sewers, and is very simple in construction. Such a system he advocates for the Finchley low-level tunnel sewer, and for the greater part of the low-level system. For the ventilation of the sewers on the high-level system he recommends the construction of upright shafts at flanks of houses or placed against trees at every available point; recommending specially the building of a brick-flue up alongside buildings about 12 or 14 inches square, exactly like a chimney, with a chimney pot on the top, this being more pleasing to the eye, and less liable to be objected to. The Finchley engineer's estimate for ventilating shafts in his district is as follows:—Thirty upright shafts at £11 10s., £345; one furnace shaft, £600; total, £945. Working expenses of furnace ventilator: coke at 7s. per day, £127 15s.; two men attending the furnace at 20s. per week each, £104, £231 15s.

THE RECENT EPIDEMIC AT SPENNYMOOR.

IN Dr. PAGE'S report to the Local Government Board anent the recent prevalence of scarlatina and enteric fever at Spennymoor, he stated 45 families had been attacked by scarlatina, in which there had occurred 83 cases with 15 deaths; and 10 families attacked by enteric fever, in which 25 cases with 5 deaths had occurred in 22 weeks—July 1 to December 1, 1888. Scarlatina, the doctor said, was seldom, if ever, wholly absent from that district in common with other colliery districts of the county of Durham. The disease was fatally prevalent in 1887, when it caused 16 deaths, and again prevalent, but with small mortality, in 1884. Returns of sickness placed at his disposal showed that scarlatina had been lingering in and about Spennymoor since 1885 until October last, when, becoming active, it might be said to have reached its maximum prevalence by the end of that month. In Tudhoe Grange a like behaviour of scarlatina had been observed *pari passu* with that in the urban sanitary district of Spennymoor. He learned that infection had spread by children returning to school within a fortnight of their convalescence. He had a strong suspicion that the National and the Board Schools played a prominent part as centres of infection. As to the milk supply, none of the seven infected families in Tudhoe Grange obtained milk from the suspected dairy farm, while of the 38 infected families in Spennymoor urban district, seven used no milk or condensed milk only, 23 were supplied from different dairies, and eight only out of a total of 144 families were known to have used milk from the dairy in question. In regard to the sewerage and drainage of Spennymoor, he found serious defects of ventilation to exist. The upper portion of the main sewer was unventilated, and the only houses invaded in this locality, two in number, were among the few having direct communication in this unventilated section. Three households were attacked in Jackson Street and four households in George Street adjoining, streets wherein the privy arrangements are of the worst possible description. The arrest of the distribution of the suspected milk supply at the end of October had no concern in the cessation of the outbreak, which, as a matter of fact, had already come to an end. He advised the Board to abate the excremental nuisances, and to recognise the dangers of a continuance of the present midden-privy system. The sanitary condition of Tudhoe Grange was, he said, eminently unsatisfactory. There was a system of sewerage and the main sewers were ventilated, but for the rest there was no scavenging or lighting, the streets are unmade, and the midden-privies are in general use.

SALFORD WORKING MEN'S SANITARY ASSOCIATION.

THE following are the objects of this Society, the first meeting of which was held on May 14:—To ascertain, as far as possible, the sanitary defects in the houses occupied by the working class and the poor in Salford; attention should be especially directed to the state of cisterns, character of the privy accommodation, supply of water, drainage, whitewashing and papering, holes in roofs or floors, disinfection after infectious illness, the removal of infectious cases, the removal of the dead without undue delay, over-crowding. 2. To report these defects to the proper authorities, and to see that the authorities do all in their power to remedy them. 3. To receive and deal with complaints in the manner to be hereafter agreed upon. 4. To call attention to any inquest in which it appears that a cause of death has been the condition of the dwelling of the deceased. 5. To promote the election of gentlemen as town councillors and guardians of the poor who are most likely to use such positions to further the objects of this Association, and to do this without regard to political opinion. 6. To communicate with the district medical officers, the relieving officers, the school board visitors, and other workers among the poor, so that this Association may form a centre of reference for the notification of sanitary defects. 7. To exercise vigilance over immoral houses with a view to their removal, or at least to lessen the evil they effect in tainted dis-

tricts. 8. To urge upon the local clergy and minister to make sanitary work a regular part of the duties of their district visitors, and to ask their visitors to report sanitary defects to this Association.

THE PREVENTION OF CRUELTY TO CHILDREN.

A DRAWING-ROOM meeting was recently held, by the permission of Mrs. Morrison, at 8, Cromwell House, Cromwell Road, S.W., on behalf of the National Society for the Prevention of Cruelty to Children. Lord FORBES presided, and there was an influential attendance.

The Hon. RICHARD GROSVENOR said he had watched the Society from its beginning, and he thought there was no Society which more deserved their sympathy and support. He felt it a disgrace to human nature that such a Society should be needed, but he was glad of its existence because of the horrible cruelties practised upon children.

The Earl of ABERDEEN said that the Society, since its formation, had entered on a large number of prosecutions, in 90 per cent. of which convictions had been obtained. There was a notion abroad that parents could do as they liked with their children; but it should be widely known that if notice of cruelty was given to an officer of the Society action would very soon be taken. The Society had no less than forty-nine branches in different parts of the country. Applications had been received from thirty other towns for an officer of the Society, and he hoped that in every small town and village an officer of the Society would be established; in fact, that no part of the United Kingdom would be exempt from the operations of the Society. At Leeds an application was made to the magistrates upon the subject and for permission to make investigations, but the reply was that there was no need for any such investigation in Leeds, for that town was quite free from any such crime. Eventually, however, the magistrates acceded to the application, and in six months twenty-three cases of child cruelty were brought to light.

The Rev. BENJAMIN WAUGH, the hon. director, gave some instances where the Society had been instrumental in rescuing the poor victims of cruelty, and in bringing the parents and others to justice. During the five years of the existence of the Society 1,200 cases had been reported, of which 800 had been dealt with, and 200 men and women had been convicted, and received sentences, varying from one month's imprisonment to two years' penal servitude. He asked for support so that they might carry on the movement until a trained officer should be placed in every little village, hamlet, or town from John o' Groat's to Land's End. He referred to cases of life insurance of children. Many a child died because it was for the interest of the parent or others that it should not live. He gave several instances of cruelty to children. In one case a boy three and a half years old, professing to sell tracts at a public resort, and half-starved and miserable, was crying. The officer of the Society spoke to him, and he said he had to take at least 1s. home or his father would beat him with a stick. Having made inquiries, and finding out the facts, the officer told the boy to go home at once, and he assured him it would be the last beating he would ever have. The officer followed the boy, and standing outside the house, overheard the cries and supplications of the poor mother for mercy to the child, and a little girl began to scream, but the father took the thick rope and struck a fearful blow on the boy's back. The officer thereupon opened the door, and took hold of the man and released the boy. The man was summoned and got six months' imprisonment. That was an instance of the manner in which cases were discovered. They had dealt with 245 cases of children almost starved to death. Men in high positions were among those they had dealt with. They had now four cases in hand in the north of England of children being slowly done to death. They wanted to get the law altered in some respects. The Society had spent £7,000 in legal proceedings. The case of child tramps was one engaging their earnest attention, and a shelter was provided in Harper Street, Theobald's Road, where children were housed and fed. This shelter with the furniture cost £1,000, and Mr. Morrison had written him a cheque for £900, when Mrs. Morrison said he might have made it the £1,000, to which he replied that she could see to the other £100.

The CHAIRMAN in a few remarks expressed his great sympathy with the work of the Society.

A vote of thanks to Mr. and Mrs. Morrison, and also to Lord Forbes for presiding, was agreed to, and the proceedings concluded.

RICHMOND AND PETERSHAM SANITARY AID ASSOCIATION.

EXECUTIVE COMMITTEE.

AT a recent meeting of the Executive Committee, the following members were present:—The Countess Russell, Lady Agatha Russell, Mrs. Beach, Hon. Rollo Russell, Dr. Anderson, Mr. Tempany, Rev. Astley Cooper, Mr. Beach, Mr. Taylor, Mr Gent, Mr. Wakefield, Mr. Higgins, and the Secretary, Mr. C. V. Godby taking the chair.

The Hon. ROLLO RUSSELL moved that the Richmond and Petersham Sanitary Aid Association petition the Surrey County Council to appoint a medical officer for the county of Surrey at an adequate salary. He stated that this had already been done in London, Worcester, and other counties. Mr. Beach seconded this proposition, and it was carrried.

ANNUAL MEETING.

The annual meeting immediately followed that of the committee.

The Second Annual Report was submitted as follows:—

"During the year ending April 30, 1889, eleven meetings of the Executive Committee have been held. The committee have to report that during the year fewer cases of insanitary conditions have been brought to their notice, and less assistance asked for, than in the previous year. The chief cause for this is no doubt the house-to-house inspection, ordered to be made by the Richmond Vestry, by the sanitary inspectors under their medical officer of health. The latter's report on the inspection shows the great necessity there was for it, and that the Richmond and Petersham Sanitary Aid Association were fully justified in using their influence with the Vestry to have it made. Of the 3,967 houses inspected, 1,403 were found to have sanitary defects of some kind, many being of a very serious character, and highly dangerous to the health of the occupants of the houses in which they existed.* During the past year a great

* HOUSE-TO-HOUSE INSPECTION.

Abstract of Inspector's Report on the Sanitary Condition of Houses.

No. of Houses.	To which the following particulars apply.
3,967	Total inspected.
2,564	Found in a satisfactory state.
1,403	Found to have sanitary defect of some kind.
165	Not inspected, being empty, or shut up, or entry being refused for inspection.
3,198	Faults of a structural character.
398	The soil pipes not ventilated.
370	The house drains not ventilated.
1,002	The waste pipe directly connected to drain.
701	The w.c.s without water connections for flushing.
26	Without water cisterns.
22	The cisterns defective or insufficient for storage or improper.
140	Without dustbins.
64	Dust receptacles defective or improper.
348	Yards and areas not properly paved and drained.
127	Damp from faults of construction.
571	Nuisances.
253	Inside premises in a dirty condition.
169	Drains and w.c.s foul and defective.
142	Damp from faulty roofs, gutters, &c., and want of proper ventilation and surface drainage.
7	Over-crowded.

Of the 1,403 houses with sanitary defect of some kind, 68 per cent. had 1, 25 per cent. had 2, 6 per cent. had 3, and 1 per cent. had 4 of the defects above specified.

JOHN T. ROWLAND.

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number of these insanitary conditions have been rectified. The Executive Committee are glad to report that the Vestry have appointed an additional inspector of nuisances, and that the duties of the medical officer of health and of the inspectors have been reorganized.

"The Executive Committee, in placing before the members the balance-sheet as prepared by the hon. treasurer, regret to report a considerable decrease in the amount of donations and subscriptions during the past year. This falling off has not only placed the Association in debt to the hon. treasurer to the extent of £2 5s. 4d., but has seriously hampered the executive in carrying out one of the principal objects of the Association, viz., to spread a knowledge of the principles of sanitation by meetings and addresses, distribution of leaflets, by the contribution of sanitary literature to the local libraries, and in other ways.

"It will be remembered during the year 1887–88 a series of free lectures upon 'Sanitation' were delivered under the auspices of the Association at the College Hall, Richmond, by such well-known lecturers as Miss Edith Barnett, Dr. Carpenter, and others, but owing to want of funds these lectures had to be discontinued.

"The Executive Committee are, however, confident that now the want and practical value of such a society in Richmond and district has been fully proved, their appeal for a more universal support by its inhabitants will be responded to, and that they will be enabled to provide means of education for all classes in sanitary matters and to carry out the original objects for which the Association was formed."

The balance-sheet showed that the year was commenced with a balance of £4 18s. 3d., to which subscriptions and donations amounting to £32 10s. had been added. The expenditure amounted to £39 8s. 7d., so that there was a balance of £2 5s. 4d. due to the treasurer. On the motion of the Chairman, seconded by Mr. N. M. Tayler, the report was adopted.

Amended Constitution.—The following amended constitution of the Society was submitted and adopted:—

1. Annual Subscribers of 1s. and upwards, who are not less than 18 years of age, shall be members of the Richmond and Petersham Sanitary Aid Association.
2. An annual meeting of members shall be held for the purpose of electing a Committee—not exceeding 16 in number—to manage the affairs of the Society. The officers of the Society, not exceeding 8 in number, shall also be elected by the members at the annual meeting, and shall be *ex-officio* members of the Committee.
3. All who have paid their subscription for the current year shall be entitled to the rights and privileges of membership.

It was explained that this would do away with the necessity for proposing and seconding new members. A list of new members, including Lord Dysart, Sir Nicholas Elphinstone, Mr. Clarke, and Mr. Barralet, was handed in by Lady Agatha Russell.

Election of Officers.—The officers were elected as follows:—Committee—Dr. Anderson, Mr. Beach, Mr. H. B. Boulter, Dr. Burn, Rev. Astley Cooper, Rev. C. F. Coutts, Dr. Fergusson, Dr. Gardiner, Mr. Gent, Mr. and Mrs. E. King, Lady Agatha Russell, the Hon. Rollo Russell, Miss Sanders, Mr. N. M. Tayler, and Mr. T. F. Wakefield; president, Countess Russell; chairman of committees, Mr. C. V. Godby; consulting surveyor, Mr. W. F. Harriss; hon. assistant secretaries, Miss Foster Newton and Mrs. Beach; hon. consulting solicitor, Mr. T. W. Tempany; hon. treasurer, Mr. S. F. Higgins. —Votes of thanks to the Chairman and to Countess Russell (president) for the great interest she had taken in the Society, concluded the business.

THE DISEASED MEAT INQUIRY AT GLASGOW.

(From our own Correspondent.)

This inquiry was resumed on June 17, before Sheriff Berry. The evidence was closed on June 1, and counsel had only to debate the question for the prosecution and defence. This occupied the entire day, and a large number of butchers, medical men, and veterinary surgeons were in attendance. The case has excited great interest throughout the country.

Mr. Ure, for the local authority, said it came really to be a question of weighing authorities on the point whether these two carcases were fit for human food, and that question depended for its solution upon two considerations. First, what was the character of the carcases when seized; and, secondly, what was the scientific inference to be drawn from the facts as to the character of the carcases. Reviewing the evidence as to the appearance of the carcases, he claimed that they exhibited symptoms of tuberculosis. Assuming the honesty and competency of the observers for the prosecution, the way in which his case could be met was certainly not by saying the signs of the disease were not present, but that the signs of the disease which were seen by his observers were misinterpreted by them, and the disease which they assumed to be tuberculosis was not that, but something else.

The evidence for the defence did not present an unbroken front in this case. Two at least of the witnesses for the defence discovered upon the bullock signs of congestion, discovered, in short, in the walls of the chest, the evidence of a disease which they called congestion. As to the scientific inference to be drawn from the facts, he gave five propositions: (1) tuberculosis, whatever form it assumed, whether phthisis or scrofula or struma, was a wide-spread disease among animals and man, and to it might be attributed about one half of the deaths of the community; (2) tuberculosis was identical in man and the lower animals; (3) the disease was communicable from the lower animals to man, by, amongst other means, inhalation and ingestion; (4) tuberculosis was due to the active presence of a specific organism known as the bacillus tuberculosis; (5) that given the signs of tuberculosis upon certain specific organs of an animal, we might and ought reasonably to infer that the virus of the disease was in other portions of the carcase of the animal where there might be no outward and visible signs to indicate its presence. It was upon an affirmation of all five propositions that the twelve eminent gentlemen who were examined for the prosecution reached the conclusion that neither carcase was fit for the food of man. All the witnesses for the prosecution were agreed that there was a risk from such carcases, although he admitted they differed as to the degree of risk. They were, however, all agreed that economic considerations could not stand in the balance against the considerations of public health. On the statements of his witnesses these carcases would be condemned in France. Turning to the evidence for the defence, Mr. Ure said that if the germ theory, as presented by his witnesses, was correct, that it was vain to adduce in support of the case of the respondents the evidence of any man who at this time of day rejected the germ theory.

It was left to Mr. Anderson to advance a view which certainly had the merit of being entirely original, that the origin of this disease was in a mystic and recondite essence which he called pabulum.

Dr. Dougall averred himself a thorough agnostic, but it would be more correct to speak of him as a Brahmin. He believed that both theories were right, and both wrong.

In conclusion, Mr. Ure submitted that the evidence led for the prosecution had demonstrated beyond all possibility of gainsaying that the two animals in question were suffering from tuberculosis, and that though the outward and visible appearance was only localized the risk to the public health of allowing these carcases to go upon the market, even although the tubercular appearances were excised, was too great to justify an experiment being made upon the public, and consequently that the whole carcases were legitimately seized by the authorities as being unfit for the food of man.

Mr. Jameson, for the defence, said it had not been shown in this inquiry that the eating of the sound flesh

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of animals that had been subject to local tuberculosis had ever been productive of any injury whatever to a single individual. Instead of making a mountain out of a mole-hill there had been a mountain made out of a very much smaller article, a tubercle. What they should submit was that in the first place the flesh of the animals was sound, wholesome flesh, fit for human food; and in the next place that there was no such risk or danger to the public proved in the use of that flesh as to entitle a magistrate or judge to condemn the flesh. As he appeared for the owner of the cow he would maintain that its carcase was perfectly healthy; that there was a lot of fat in the instaticis of the flesh; that there was nothing like emaciation; and also, that the disease had not become generalized. He was not going to deny that the cow was affected with tuberculosis. That was proved beyond a doubt, but it was local tuberculosis in a quiescent if not in an arrested condition. After reviewing the evidence of some of the witnesses, he said that tuberculosis, milk had been proved to be the cause of tuberculosis in the human subject, but it had not been proved that tuberculosis flesh had been the cause of a single case. He maintained that ordinary cooking would destroy the bacillus, and if a man chose to take the risk of having his meat underdone, he was free to do so. Speaking of the Paris Congress, he said that when scientific men made a hobby of a subject they rode it pretty far. This science of bacterioly was still in its infancy.

Mr. Comin Thomson, for the prosecution, said if his lordship gave effect to the fullest extent to the view the local authority invited him to adopt, the destruction of meat intended for human consumption in Glasgow would not be anything so enormous, or the consequences so disastrous, as indicated by the defence. According to the evidence of the inspector, there were only ½ per cent. of the animals killed in Glasgow affected with tuberculosis. That was a comparatively small matter. The question before his lordship was, whether he was to be guided in this matter by empiricism, or whether he was to allow the light of scientific inquiry to guide him. The policy of the Statute was that the buyer should not be exposed to the *risk* of eating what might be injurious to him. The maxim, *salus populi suprema lex*, applied in this case. The public health should be considered before any question of pounds, shillings, and pence. Science had established, beyond all room for question, that in an animal in which tuberculosis was visible anywhere, then every portion of the animal, as far as a thing could be proved, was unfit for human food. Even those who denied that this disease was systemic, or communicable by ingestion, were absolutely inconsistent in their conduct with the theory they professed to maintain. Referring to the operation of cooking, Mr. Thomson, said the bacillus was a vegetable, and the spore of a vegetable had much more vitality than the spore of an animal. Experts had maintained that ordinary cooking was insufficient to destroy the bacillus. The disease had advanced so far in both animals. that even according to the present modes, the carcases ought to have been seized. Even if they could not have been seized under the existing practice, yet the evidence had established this, that there was so great risk connected with their consumption as food, as to warrant their seizure.

Mr. McKechnie, for the owner of the bullock, then addressed the Court at some length as to whether this should not have been a police-court case instead of one of public health. The Glasgow authorities had power under their own Statute to prosecute cases of this kind. Could the prosecution maintain that there had been cases of vomiting or purging from partaking of the food of such animals? If the food at the time it was partaken of was fit for human food, than the Statute did not apply. They were not protecting the purchaser of any particular carcase or piece of food; they were using the Public Health Act for the protection of humanity at large. Where it was a question that went to the general principle of economics, the Legislature would not part with the question except upon a distinct compact with the judicial body. They would hand it over to them in an Act of Parliament. The Statute was intended to prevent the purchaser from getting a poisonous dinner for the day and nothing else. After reviewing the composition of the Privy Council Committee on Tuberculosis and the report thereon, he said it was not a question of preponderance of evidence, but one as to whether the prosecution had proved to his lordship's satisfaction that the partaking of a meal of this bullock would be injurious to man in the sense he had explained when speaking of the law on the matter.

On Thursday, June 20, the Sheriff delivered judgment on the two cases, at his chambers, condemning *in toto* as unfit for human food the carcase of both the bullock and cow, and ordering the same to be destroyed at the sight or to the satisfaction of the petitioner—the sanitary inspector. In lengthy notes appended to his interlocutors, he finds it proved (first, as to the bullock) that ingestion is one of the ways by which tuberculosis is communicated from the lower animals to man; that these animals were suffering from tuberculosis; that ordinary cooking would be insufficient to destroy the spores of the baccili in the flesh of such animals, and that it would not be proper to trust to cooking as a sufficient protection. "In coming to the conclusion that the prayer of the petition should be granted, I have been deeply sensible of the responsibility of condemning as unfit for food, meat which under the practice hitherto followed in Glasgow, and still observed, as the evidence shows in various large towns in England, would apparently have been allowed to pass out for consumption. That practice, however, I am led to think is attended with danger to the public health. Reference has been made in the course of the case to the fact that of late years there has been a marked diminution in the mortality from tubercular disease in Glasgow and country generally, while at the same time there has been an increase in the consumption of butchers' meat. It is suggested, therefore, there can be no great reason for interfering with the system under which butchers' meat is being sold for food. The improvement, however, which has taken place, and for which we may be thankful, affords no ground for abstaining from the removal of any danger, or any impediment to further improvement which may be shown to exist. Diseases of the tubercular class are widespread and varied in form, and entail very grave consequences. . . . It appears from the evidence that only about ½ per cent. of the cattle exposed in the Glasgow market are affected with tuberculosis, and of those so affected about one half are condemned under the system which has hitherto prevailed, while about one half are passed. In other words, a condemnation of all the animals so affected would only involve the additional condemnation of ½ per cent. The loss even of that proportion of the food supply is much to be regretted. But in weighing its importance, I am of opinion that it is insufficient to overcome those considerations in the interest of the public health which must be regarded as paramount."

The Sheriff's deliverance in the case of the cow was similar to that in the case of the bullock The decisions may be said to have given general satisfaction in Glasgow.

The evidence, speeches of counsel, and Sheriff's deliverances, are being printed at the joint expense of the local authority and Butchers' Association, and will form a thick octavo volume.

ENTERIC FEVER AT MYTHOLMROYD.

Dr. Page, Local Government Board inspector, has issued his report, dated April 24, on his recent visit to Mytholmroyd to inquire into the prevalence of enteric fever. Dr. Page points out the sanitary difficulties arising through the village being divided among four sanitary authorities. He speaks of the River Calder as being highly polluted with sewage and excremental matters, and as being little

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better than an open sewer, much of the endemic fever being attributed by medical opinion to its effluvia. The water supply from the hills he regards as not free from impurity, and says there is no system of sewerage in the village, and adds—"A community without proper sewerage, largely dependent for water upon supplies that are polluted, and for the most part left to shift for itself in the matter of cleansing of privies and ashpits, is unquestionably in a very rudimentary sanitary condition. Such is the case of Mytholmroyd." He concludes: "The difficulty besetting the authorities in dealing with the sanitary wants of Mytholmroyd are, in a large measure, the result of divided (if not conflicting) responsibility, which has precluded that unity of action and comprehensive treatment which its circumstances urgently demand. It would be beyond the province of this report to formulate a scheme of amalgamation for the districts concerned, but it is quite clear that the vesting of the sanitary jurisdiction of the place in one responsible authority is indispensable to its substantial improvement and to the maintenance of its sanitary welfare. Another difficulty to be contended with is the pollution of the Calder. Remedy for this would seemingly depend at present upon the enforcement of the provisions of the Rivers Pollutions Prevention Act by riparian authorities, who in this matter are themselves the offenders."

NATIONAL REGISTRATION OF PLUMBERS.

THE quarterly meeting of the Nottingham and Nottinghamshire District Council was held at the University College on June 20, Mr. R. EVANS, J.P., presiding. The Registration Committee of the Council reported that during the quarter 37 applications for registration from master and journeymen plumbers had been received; 26 of the applicants, whose testimonials and credentials were satisfactory, were nominated for registration by the Worshipful Company of Plumbers, four applicants were referred back for further references, and seven applicants were requested to submit themselves to a practical examination. Upon the question of a local examination, the secretary was requested to ask the Company of Plumbers to send down one or more examiners to confer with the local examining body and arrange to hold an examination not later than the end of October next. Classes of instruction to plumbers, both in theory and practice, will be held at the University College. The particulars of the classes, &c., will appear in the next annual prospectus of the College. The Council decided to issue to the local sanitary authorities of the county a circular letter setting out the objects of the registration scheme, and the opinion expressed by the President of the Local Government Board to the deputation which recently waited upon him, that all local authorities should employ for plumbing work none but registered plumbers. Eleven certificates of registration have been received, and were handed over by the president to the undermentioned plumbers, whose credentials as practical men were considered satisfactory:—*Masters*: Frederick Cook, Edward Hewitt, Thomas Henson, sen., W. W. Holbrook, and James Humphrey, all of Nottingham. *Journeymen*: Beardsall, Edward Binley, Thomas W. Henson, jun., S. P. Newton, Thomas Nolan, and John Henry Roper, all of Nottingham. Previous to receiving the certificates each recipient was called upon to sign a declaration, the following extracts from which are of interest to the public, viz:—"The Worshipful Company of Plumbers reserve the right to remove the name of the grantee from the register if it shall be shown to the satisfaction of the worshipful company that he has made wilful misrepresentation in respect of the facts stated in his application for admission to the register. The grantee of this certificate hereby recognises the right of the company to suspend or cancel the certificate in the event of his doing any act which, in the opinion of the company, is contrary to the integrity of the trade and injurious to the public." It is believed that registered plumbers only are to be entrusted with superintending the house and other connections for the coming extension of the Kirby water system.

NATIONAL PENSION FUND FOR NURSES.

AT a meeting of the Council, held on July 4, Mr. WALTER H. BURNS in the Chair, the Chairman had the gratification to announce that Her Royal Highness the Princess of Wales had accepted the office of president, and that the Prince of Wales had consented to act as its patron. It was reported that the authorities of the Royal Hants County Hospital, Winchester, have determined to affiliate their institution to the fund, and to pay half the premiums of each of their nurses. As upwards of 1,000 annuity proposals have been obtained, the fund is now legally constituted. The policies issued represent a premium income of sufficient extent to make the loading, *i.e.* the amount provided by the actuary for expenses, equal to four-fifths of the whole expenditure under every head since business was commenced in July 1888. The remaining fifth, together with the expenses incurred between the registration of the society in February and the commencement of business in July 1888, have been defrayed by Mr. Edward F. Coates, who has given 250 guineas, and by Messrs. C. de Murrieta & Co., who have contributed 500 guineas for the special purpose. The foregoing donations enabled the manager to report that all the money contributed to the bonus fund, together with the interest derived from the deposit of £20,000 in the Court of Chancery, was available for distribution to the nurses in bonuses without any deduction whatever. The four gentlemen who had deposited the £20,000 as security for the policy holders, have now given this money absolutely to the fund. Wishing to show some mark of appreciation towards those of the first 1,000 nurses who have joined the fund unaided by any institution, they have determined to give £5,000 thereof towards a special bonus fund, to enable the Council to give to each of the said nurses a substantial reversionary bonus when her pension commences. They further wish to place the remaining £15,000 to the credit of the general bonus fund, to be used under the control and at the discretion of the Council for the benefit of all the nurses within the British Empire who may from time to time join the National Pension Fund for Nurses.

SANITARY MATTERS IN GERMANY.

(*From our own Correspondent.*)

THE new workmen's colony, "Wilhelmsruhe," near Cologne, owes its existence to the beneficence of the deceased Geheimen Bergrath, Professor Dr. Gerhard vom Rath, of Bonn. The giver has appropriated a sum of 750,000 marks to the foundation of the colony, and has provided that all profits from the rents shall be employed for its further enlargement, or for other institutions for the benefit of the working classes. The estate next to be built on contains 14 acres of land, in a high and healthy situation at the intersection of two highways; a further plot of 6 acres has been secured for further enlargement. The dwellings are erected in groups of five or ten houses, containing 160 dwellings. Between each house is an air space of 25 feet, the fore-courts have a depth of 34 feet, and the street between two rows of houses of 25 feet; so that the distance from house to house is 100 feet. Behind the houses is a yard 22 feet in depth, which contains a small stable for goats, pigs, poultry, &c., and the privies. The dwellings are of two sizes, one group containing four rooms, kitchen included, the other three apartments All the houses are provided with cellars and lofty granaries; the staircases are spacious; the windows large so as to admit plenty of light and air; and the height of the rooms is 10 feet and 10 feet 6 inches respectively. As soon as the colony, which is to be completed within five years, possesses

Workmen's Dwellings near Cologne.

a sufficient number of dwelling-houses, an administrative building is to be erected, containing dining-room, baths, assembly and book rooms, and an infant school surrounded with playgrounds. The smaller houses, containing two dwellings in two stories, will cost £350 each; the larger ones, each containing three rooms and a kitchen, £450. The rent is to be put so low, that for the same amount the workman has to pay for a two-roomed dwelling in the town, he will get a double number of rooms in the workmen's colony. The houses are not to be sold to workmen, as has been the case in other places; experience having shown that very often the houses fall by sale into the hands of tradesmen or inn-keepers for whom they were not originally destined, and who draw profit from the cheap property, by letting them again, thus depriving the workmen of the benefits of cheap dwellings. Also, for the maintenance of order and cleanliness in such aggregations, a uniform administration is thought necessary, which could be no longer possible if the property passes into other hands.

Small-pox mortality.

According to Dr. Rahts (*Ergebnisse einer Statistik der Pockentodesfalle im Deutschen Reiche f. d. Jahr 1886. Arbeiten im dem k. Gesundheitsamte*), only 155 deaths from small-pox have become known to the authorities during 1886, or 0·33 for every 100,000 inhabitants; 24 of these cases occurred in places which have free intercourse with foreign countries (Bremen, Hamburgh, Koenigsberg, Dantzig), 43 in districts on the Russian, and 84 in districts near the Austrian frontiers. In the inland districts, properly speaking, only 45 deaths from small-pox occurred. Fatal cases of small-pox were reported from 86 communities; 54 of these had 1 case each, 19, 2 deaths from small-pox. The highest mortality in one place (Hamburgh, Koenigsberg, and at two eastern frontier places) was 5. Of the 155 fatal cases, 61, or 40 per cent., were persons under one year, and therefore, for the most part, unvaccinated; 12 were from two to twenty-five years of age, and among these were 6 unvaccinated foreigners. Of the twenty-two large towns with over 100,000 inhabitants, eight only had fatal cases of small-pox, viz.: Berlin, 0·07 per 100,000; Hamburg, 3·6; Munich, 0·8; Leipsic, 1·7; Koenigsberg, 3·3; Bremen, 0·8; Dantzig, 0·9; Stuttgart, 1·7. These numbers compare favourably with the small-pox mortality of other large towns of Europe, which was in Antwerp, 31·7 per 100,000; Brussels, 11·4; Buda-Pesth, 368·7; Genoa, 153·8; Liverpool, 4·9; London, 0·6; Marseilles, 545·3; Moscow, 34·1; Odessa, 25·2; Paris, 9·0; St. Petersburgh, 15·3; Prague, 55·5; Rome, 134·3; Venice, 51·6; Warsaw, 32·2; Vienna, 26·2 per 100,000.

Sewage purification.

In Essen, the contents of the public sewers are cleaned by the Roeckner-Rothe method, with most satisfactory results. The purified liquid can be turned into the water-courses without danger to health, while the mud obtained in the precipitation tanks is rich in fertilizing substances. According to the analyses published by the *Agricultur-Chemische Versuchsstation*, the mud has the following composition:—organic matter, 28·21 per cent.; nitrogen, 1·63; mineral matter, 71·79; lime, 20·85; clay and oxide of iron, 9·09; potash, 0·38; phosphoric acid, 1·01; silicic acid, 8·75; sand and gravel, 19·19. The mud still contains water, but is solid enough to be removed without inconvenience, and is given away to the farmers.

NOTES FROM THE NORTH.

(*From our own Correspondent.*)

Wark sewerage scheme.

The report of Mr. H. Laws was presented at the last meeting of the Bedlington Rural Sanitary Authority, when the proposed Wark Sewerage Scheme came under the consideration of the authority. Mr. Laws advocated straight sewers wherever possible, but curves must be provided with manholes. The flushing tank should be made self-acting, to act every twenty-four hours; the tank to be placed further up the hill to give a greater flushing force. The Board decided to send these plans, &c., to Mr. Bulmer for readjustment in accordance with Mr. Laws' report.

The Local Government Board having complained of the quality of the milk supplied to the inmates of the Chester-le-Street Union, on inquiry it was elicited that the purveyors tendered for old milk only. At the suggestion of Dr. W. M. Renton, the medical officer of the Union, it was agreed to use one-half new milk and the other half such as they were getting.

The Hexham Urban District Medical Officer of Health (Dr. Maclagan) recently had his salary cut down by the Board from £300 to £108 per annum, after more than fifteen years' service. Misfortunes seldom come singly, and on leaving the meeting Dr. Maclagan fell down and broke his thigh-bone, an accident of more than ordinary importance to a person of his age. He was carefully removed to his residence at Riding Mill.

The Consett Local Board have authorized the construction of foot-roads in the Consett and Benfieldside Public Park, as also the appointment of a park-keeper and other arrangements necessary for the proper maintenance of a public park, which they have submitted to the consideration of the Consett Iron Company, who gave the site for the purpose of a park. Dr. George Renton was reappointed medical officer, at a salary of £20 per annum.

The continued dry weather has provoked serious misgivings as to the future in several places in the North of England. At the meeting of the Stockton and Middlesbrough Water Board on July 8, Mr. Frank Hylton, Chairman of the Eston Local Board, pointed out to the Water Board the serious consequences arising from a short supply of water at Grangetown, where the people suffered to the extent of almost being deprived of the supply required for domestic purposes. The Chairman said the large works they had in hand had only been retarded by the Board, because they never anticipated the growth of the demand being so rapid as it had been.

The Lanchester and Chester-le-Street authorities have made arrangements with the Whickham Local Board for the purpose of supplying the district of Marley Hill with an efficient water supply.

One of the most healthy and cheering signs of the times is the great and increasing growth of the traffic in flowers in the Newcastle Market on Saturdays, which, at the present time, greatly exceeds anything previously seen there. From the construction of the houses in Newcastle, few of the older dwellings can boast of even an apology for a garden. Land in the centre of the city being at a premium, gardens in a central situation are rarely seen; whilst the system of living in flats, which there prevails so extensively, renders window gardens more highly appreciated. In addition to plants grown in the neighbourhood, large consignments reach the market weekly from Covent Garden.

Mr. J. M. Ridley, Chairman of the Hexham Local Board, has resigned his position as he differed in opinion from the majority of the members of the Board; holding that the local officer of health should be made independent of private practice.

OPENING OF THE NEW SEWAGE WORKS AT KINGSTON-ON-THAMES.

The Native Guano Company, whose mode of treating sewage is known as the A B C Process, and whose work in connection with the sewage of Aylesbury has often been mentioned in these columns, invited a large representative company of experts, on Saturday, June 29, to witness the opening of the New Sewage Works at Kingston, recently completed by them for the purification of the sewage of that town, Surbiton, and Hampton Wick. We append an illustration. Although we have described the Native Guano Company's process on former occasions, it will, perhaps, be convenient to many of our readers that we should repeat the description here.

The sewage on reaching the works passes into the

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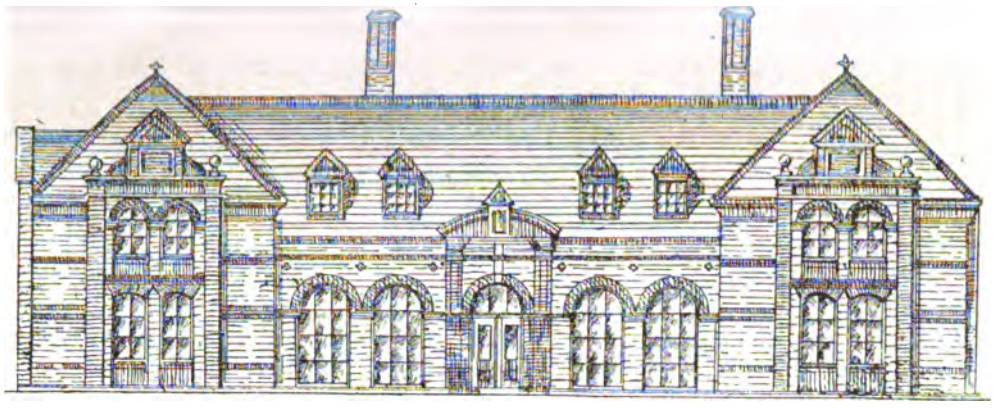

1. Kingston Screening Chamber
2. Surbiton Screening Chamber
3. Kingston Pumps
4. Kingston Meter
5. Surbiton Pumps
6. Surbiton Meter
7. Main Driving Engines
8. Boilers
9. Coal Store
10. Chemicals
11. Mortar Mills
12. Mixing Vats
13. Channel from Pumps to Settling Tanks
14. Sludge Pump
15. Air Pumps
16. Accumulators
17. Drying Cylinder

PRECIPITATION TANKS

PRECIPITATION TANKS.

OUTLET TO THAMES

SLUDGE WELL

INLET

STORES

OFFICES

ENTRANCE

RIVER THAMES

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screening chamber and through a grating, which intercepts the coarse matter likely to choke or injure the pumps, and thence through a culvert to a pump well under the main building, where it receives the "B.C.," or the deodorizing and purifying mixture. The sewage thus partially treated is raised about 12 feet by centrifugal pumps, of which there are three, each driven by a 15 horse-power engine, and capable of lifting 1,650 gallons per minute. The pumps discharge into a meter chamber where the sewage is measured, and the quantity registered. On leaving the meter the sewage flows along an open channel to the settling tanks, receiving on its way the precipitating agents. There are eight tanks, each 85 feet long, by 50 feet broad, and 6 feet average working depth, holding 150,000 gallons, or 1,200,000 gallons in the aggregate, which gives a capacity of 30 gallons per head for a population of 40,000

The treated sewage flows in a continuous stream through the tanks, precipitating as it flows, and passes clear, bright, and odourless into a covered channel discharging into the Thames.

The tanks are cleaned periodically, the deposit or "sludge" being pumped into the sludge-well by a Tangye-Holman double-action pump at the rate of 500 gallons per minute. From this well the sludge is first drawn into four sludge vessels or accumulators, by the creation of a vacuum, and is then forced by air pressure, at 100 lbs. on the square inch, into filter presses on the first floor of the building from which it is removed in hard cakes. There are two of Scott's air pumps and eleven of the Native Guano Company's filter presses.

The pressed cakes are dried in a Borwick's drying cylinder (with fan and condensing apparatus attached), ground into powder, bagged, and sold as native guano at £3 10s. per ton.

The Surbiton Sewage is separately received and screened, and is pumped by centrifugal pumps through a meter into the Kingston pump-well. There are three pumps, each driven by an 8 horse-power engine, and capable of lifting 750 gallons per minute.

The boilers are of the locomotive multitubular type, working at a pressure of 150 lbs. per square inch, one of 80 horse-power and two of 60 horse-power each.

The two main driving engines, each of 40-horse power, are used alternately, and like the pump-engines, are of Messrs. Willans & Robinson's patent kind.

Two mortar mills are used for grinding the chemicals, which are then mixed in vats and discharged into the pump-well; and there are two vats for dissolving the precipitating agents.

A small centrifugal pump supplies water from the river for the boilers, mixing the chemicals, &c.

The works have been constructed for treating, by the Native Guano Company's processes, the sewage of 35,000 people; but with certain comparatively inexpensive additions, they will meet the requirements of a population of 50,000.

At present, the sewage being treated is that of	
Kingston, with a population of . . .	26,156
And of Surbiton	11,912
Total .	38,068

In a short time Hampton Wick (population, 2,500) will send its sewage over the railway bridge to these works, by one of Shone's ejectors.

The works and buildings appear to be of the most satisfactory character, and appeared to meet with the approbation of most present. The effluent which was running briskly into the Thames, and which the writer tasted, appeared to the taste to be purer than many pump waters that we have sometimes to drink.

After the inspection, a luncheon was given in a marquee erected in the grounds, which was presided over by the Hon. W. F. B. Massey-Mainwaring, Chairman of the Company. The company present comprised General Sir Linton Simmons, G.C.B.; Sir J. H. Gibson Craig, Bt.; Sir John R. Heron Maxwell, Bart.; General Sir Orgeur Cavanagh, K.C.S.I.; Sir William Hardman, M.A.; Mr. P. McDonald, M.P.; Mr. P. McLagan, M.P.; Mr. Hugh Watt, M.P.; Mr. John Wilson, M.P.; and Messrs. R. Hedley and S. H. Terry, C.E., of the Local Government Board The Corporation of London was represented by Messrs. Graham King, Horace Augustus Alexander, T. J. Arrowsmith, Joseph Henry Batty, Joseph Bowles, W. Darkin, James George White (Deputy); and the London County Council by Messrs. Burns, Cellard, Frye, Hopkins, Osborn, Rhodes, Capt. Sinclair, Howell Williams, Young, Hart Bennett, Lovich, Dibdin. There were also several mayors, medical officers of health, surveyors, &c., including the Mayor of Kingston and several members of the Corporation, and the Surbiton Improvement Commissioners, Hampton Wick Local Board, Thames Conservancy Board, and the Sea Conservancy Board were represented. The authorities of the district appeared thoroughly satisfied with their new undertaking.

AN ISOLATION HOSPITAL AT HORNSEY.

AN HOSPITAL for the isolation of infectious diseases has been recently opened at Irish Corner, Tatterdown Lane, Hornsey. The building, which has been erected from the designs of Mr. T. de Courcy Meade, C.E., engineer to the Local Board, is fitted with the most approved appliances science has suggested. It is, we believe, only the second hospital of its kind that has been erected in the metropolitan district; but we hope the example of the Hornsey Board will be followed in other suburban districts. The value of an institution of this character for the isolation of infectious diseases cannot be over-estimated, and if private individuals who are in a position to pay will avail themselves of the institution in question, it will be more likely to stamp out disease, and to save trouble and expense in their own homes than by their remaining there. This convenience the Hornsey authorities intend to offer to the surrounding district. The Hornsey Local Board have purchased about twenty acres of land, at the price of £260 per acre, which is considered very low, but of this quantity only about three and a half acres have been devoted to the hospital. The premises are fenced off, and the building is, indeed, isolated, being nearly two miles from a railway station, and surrounded by fields. It is to be hoped that the speculative builder will not be allowed to erect houses too near to this haven for the cure of disease. The erection of the hospital has been forced upon the local authorities by the Local Government Board, owing to difficulties that had arisen in obtaining admission to a hospital for cases of small-pox and similar diseases occurring in the parish. The Local Board determined to erect a building of the best description, arguing that though the inital outlay might be large, it would be cheaper in the end. The present hospital is only fitted with ten beds, but is capable of holding a much larger number should they be required. Each bed has now 2,096 cubic feet of air space. The inside walls are covered with white glazed tiles, block flooring polished, and it is said they will not be affected by the disinfecting acids used. About fifty feet from the hospital stands the administrative block, with residence for matron and nurses, surgery, &c., all fitted with the best kind of domestic appliances. Another independent building is the mortuary, which also contains one of the new steam disinfectant apparatus made by Goddard, Massey, & Warner, of Nottingham, and was described in the SANITARY RECORD a few months since. The total cost of the land and building is £6,276

Mr. H. R. WILLIAMS (Chairman of the Local Board), who presided, in asking Alderman Latham, J.P., and member of the County Council of Middlesex, to declare the hospital open, mentioned the circumstances that had led to the erection of the hospital, and said that every parish in the county ought to be provided with a similar institution. Ealing had led the way a few years since by erecting the first one, and their own was only the second, but he hoped the County Council would insist upon each

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district having one, so that Middlesex should be made a perfect sanitary county. Hornsey was a very healthy parish, the death-rate last year being only a fraction over 10 in 1,000. The Local Board had adopted an enlightened policy in doing everything in their power to make the sanitation as perfect as possible, and although these matters added to the rates, it was better for the working classes to have sound health, with good sanitary surroundings, than that they should get ill, fall out of work in consequence, and be unable to pay the rates, however low they might be. He paid a high compliment to Mr. Meade, their surveyor, who had carried out all the work to the entire satisfaction of the Board.

Alderman LATHAM, in a few felicitous remarks, then declared the hospital open. In the course of his speech he congratulated the ratepayers that they had a Local Board who had shown so great a desire to render their parish a healthy one. By their wise policy they had largely improved the value of property in the district, and, therefore, the money they spent, in more senses than one, was productive.

Mr. GILBERT ROBINS moved a vote of thanks to Alderman Latham, and said Hornsey had now the best dust destructor, one of the best mortuaries, and coroner's court, and the best isolation hospital in the kingdom; and he was glad to know that their rates were less than they were in any neighbouring parish.

Mr. BOSLEY seconded the motion, and mentioned the numerous improvements that had been carried out in the parish under the able guidance of Mr. H. R. Williams.

SMALL-POX FROM RAGS.—A rag sorter employed at a paper mill at Blackburn was recently found to be suffering from the disease supposed to have been contracted at his occupation. The whole of the sanitary staff of the borough and the rural sanitary authority made a careful inspection of the neighbourhood and took the necessary steps to confine the disease.

THE report of the Grand Junction Waterworks Company for the half-year to March 31 states that the directors recommend a dividend at the rate of 9 per cent. on the ordinary share capital, of 7½ per cent. on the £25 C shares, and of 7 per cent. per annum on the new ordinary £50 shares, warrants to be issued on and after July 15.

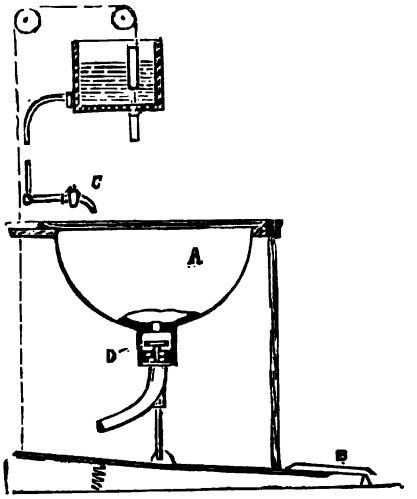
INSTRUCTION IN SANITARY SCIENCE.—Mr. Robert H. Mushens, Teacher of Sanitary Science, Chemistry, &c., Sunderland, has introduced a system of instruction by post in the above subjects, for students at a distance. A course of thirteen lessons are sent weekly, by post, or at longer intervals if desired, and adapted as far as possible to the requirements of each student. Progress is tested by a series of questions sent with each lesson, on the work in hand, and by many other useful hints. The idea opens up a somewhat new feature in tuition, and will no doubt be found useful to many who have not the advantage of being in touch with teachers of these subjects in their own neighbourhoods.

A RECREATION GROUND FOR GREENWICH.—The large churchyard adjoining St. Alphege's Church, Greenwich, has lately been laid out as a public garden by the Metropolitan Public Gardens Association, and was opened by H.R.H. the Duke of Cambridge on June 25. The ground is nearly four acres in extent, and well timbered. It contained several hundred tombstones, most of which have been placed round the walls, and the work of laying out the garden has cost about £900. St. Alphege's is the parish church of Greenwich, and the ceremony on the 25th was a gay scene, the ground being crowded first with the ticket holders and 1,000 boys of the Hospital Schools, and afterwards with the general public, who were delighted to claim their new garden. The Greenwich District Board of Works will maintain it.

ILLUSTRATED SANITARY PATENTS.

7,712. (1888.) IMPROVEMENTS IN LAVATORY BASINS AND APPARATUS IN CONNECTION THEREWITH TO WORK AUTOMATICALLY OR OTHERWISE. ANTHONY HARRIS, Middleton-on-Tees, York. [8d.]

The object of this invention is to place the whole or a portion of the apparatus for emptying and filling the lavatory basin out of the control of the person using it. In the figured is shown how this end is attained.



A is a fixed basin, B is a spring-balanced footboard connected with a waste-cock D, and with the supply valve C. When a person stands on the footboard for the purpose of using the basin, the waste valve is closed and the supply opened, when he steps off the footboard, the recovery of the spring causes the valves to return to their original positions—namely, the waste open and the supply closed. The supply is fitted with a water-waste preventer, so that only the necessary quantity of water for use is discharged at one time. There are several modifications of this invention; amongst them is an arrangement by means of which the basin can only be filled by the insertion of a coin into a suitable coin-freed apparatus connected to the actuating parts or the water supply.

Claim.—The combination of a spring-balanced footboard with the supply and waste valves of a lavatory basin, and the various modifications alluded to, for the purpose set forth.

8,491. (1888.) IMPROVEMENTS IN MEANS FOR EXPELLING LIQUID FROM AND COMPRESSING SEWAGE SLUDGE AND OTHER SEMI-FLUID OR PLASTIC SUBSTANCES. JOSEPH PRICE, 58, Lombard Street, London. [6d.]

The object of this invention is to provide ready and effective means for expelling water or other liquids, or expressing moisture from solid or insoluble substances when held in a fluid, semi-fluid, or plastic condition, and in certain cases moulding the products in order to render them more commercially useful.

The apparatus consists in a species of press, with a mould of metal, wood, or other suitable substance, of sides and top sufficiently strong to resist the pressure required; the top may constitute the head of the plunger of the press, and may have any desired pattern or device cut upon it to be impressed upon the substance in the mould. Such pattern or device need not necessarily be formed upon the plunger, but can be cut upon a plate capable of being attached to it. The bottom of the mould is preferably a false bottom, and so constructed that it overlaps the sides, or fits or dovetails therein. This bottom is perforated with holes, and when about to be used, it is

placed on the table or bed-plate of the press, which is first covered with a sheet of felt or other suitable porous material, on the top of which is placed a piece or sheet of linen, wire, or gauze to prevent the felt or porous material being choked or rendered useless by contact with the substance under treatment.

By this arrangement, the sides and top of the mould and the table of the press being sufficiently strong, any desired pressure can be brought to bear on the substance therein, whilst the false bottom of the mould can be readily removed and the contents easily dealt with. The liquid portion is driven through the holes in the bottom, and then through the linen or gauze and felt.

The sides of the mould may be fixed to the press to prevent shifting when the pressure of the plunger is applied.

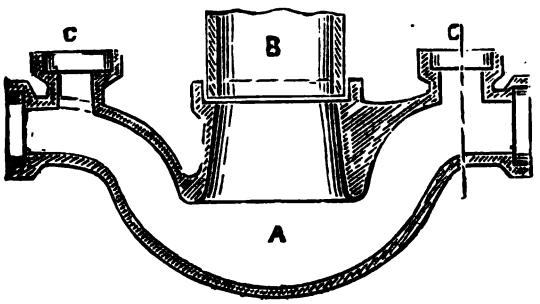
The table or bed-plate can be made in one or more pieces, and may work on pivots or hinges for the greater convenience of removing the compressed products from the mould.

This invention is especially intended for the treatment of sewage sludge after it has been precipitated; but it can also be used for the treatment of peat, whiting, china-clay and other substances where it is desirable to separate the fluid from the solid portions.

Claim.—The combination of the several parts of the apparatus as described, and for the purposes set forth.

11,249. (1888.) IMPROVEMENTS IN SYPHON DRAIN PIPES AND THEIR CONNECTIONS. WILLIAM ROSS, jun., Claremont Road, Sparkbrook, Warwick. [8d.]

This invention consists in constructing a syphon similar in general principle to those now in use, but made much larger—that is, swelled or bulged out in its central portion, and provided with a central uptake pipe sufficiently large as to be used as a manhole for the purpose of cleaning out the trap, &c.



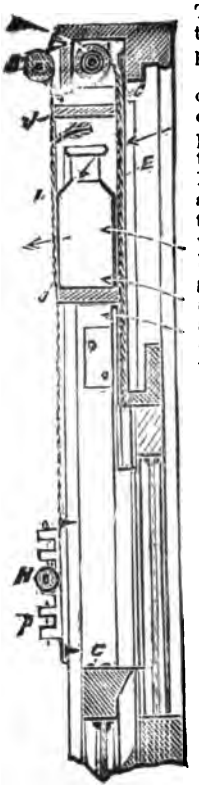
In the figure A is the body of the syphon, and may be circular or elliptical on plan. B is the uptake pipe, which acts as a manhole; C, C^1 are branch sockets, which are available for several purposes, for connecting with any ordinary system of drainage, or for passing down discs of metal to interrupt the flow of sewage when the trap is being cleaned out, also as ventilating branches.

There are several modifications of form of which this invention is capable, and which are fully described in the specification.

Claim.—The making of a syphon pipe with an enlarged or bulged central part, to afford facilities for cleaning out the same, and also that the trap need not be cleaned out so frequently as those now in general use require to be. Also the above syphon in combination with a central uptake pipe large enough to act as a manhole, and the same further in combination with two vertical end uptake sockets for the purposes described above.

1,613. (1889.) IMPROVEMENTS IN WINDOW VENTILATION. ALFRED CREIGH STEVENSON, Oakdale Station, Allegherry County, Pennsylvania, U.S. [8d.]

The object of this invention is to provide for the ventilation of rooms without the production of currents of air.



The figure represents a vertical section of a window fitted with the proposed improvements.

A diaphragm or screen E of canvas or other suitable material is mounted on a spring roller D at the upper part of the groove for the lower sash, the said screen extending about 10 or 12 inches from the top of the window, and being wider than the length of the roller, and on the sides next the window frame is provided with a broad hem that is received between guides attached to the beads that separate the sashes. When the screen is wound up the hem extends over the ends of the roller, so that the screen may lie flat on the roller.

The lower part of the screen is attached to a cross strip, whose ends slide in the groove of the upper sash, to which it is attached, so that as the upper sash is pulled down the screen unwinds. The roller is fitted with a coiled spring, so that the screen winds up again when the sash is raised. The roller also has a spring which yields to allow of the roller being placed in and removed from its bearings.

At the top of the frame, in rear of the roller, is provided a strip G, and on the top of the lower sash there is another plate G^1, to close the space between the sashes when the upper one is lowered. On the inside of the window-frame there is a second screen I of a lighter fabric, such as muslin, attached at its upper edge to a roller H, mounted in brackets on the frame, and at its lower edge secured to another roller H^1, which is adapted to be fastened to a notched plate P for the purpose of holding the screen tight.

Between the two screens, and supported on brackets, is provided a rectangular frame J, the edges of which come against the screen. This forms a chamber for the reception of disinfectants or inhalants which are contained in wide-mouthed jars supported on the frame. By this means the air passing in through the screens becomes charged with the disinfectant or inhalant, or the air may be treated in any way, whilst at the same time any draught or current of air is avoided.

Claim.—The combination with a window-frame of two foraminous diaphragms, arranged side by side across the window opening, forming a space between them which is utilized as a chamber for the reception of disinfectants or other substances for modifying the character of the air admitted to the room through the same, substantially as set forth.

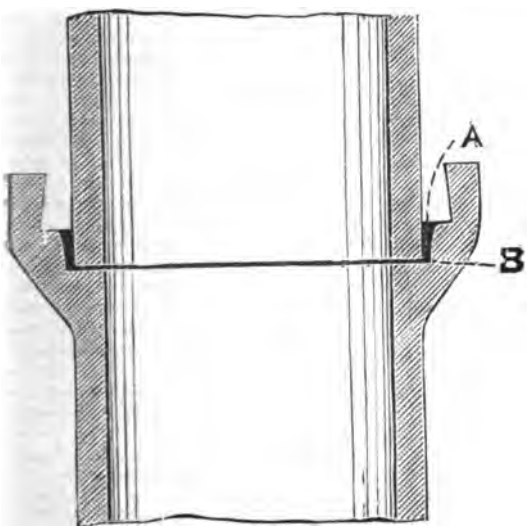
3,088. (1889.) IMPROVEMENTS IN THE JOINTS OF STONEWARE PIPES, TRAPS, GULLIES, AND OTHER SANITARY WARE. WILLIAM ASSITER, 207, Brixton Road, London, S.W. [6d.]

This invention consists primarily in forming double sockets on stoneware, traps, gullies, and other sanitary ware as shown in the figure.

In laying the pipes, &c., the spigot end of one is placed in the inner socket of the adjacent pipe, and the joint is completed by filling the outer socket with cement; the usual bedding in cement which is necessary with the ordinary form of socket being dispensed with, thus preventing the risk of any cement being forced into the interior of the pipe, and forming an obstacle. The outer socket intended for the reception of the cement is dove-tailed, as indicated in the drawing, being smaller at the outer end than at the inner: which form, combined with the swell-

ing of the cement in setting, contributes to the formation of a very tight and perfect joint.

Another form of this invention consists of a similar joint to that above described with the addition of a ring or band A formed of india-rubber or other suitable material. This band or ring, which is tapered, is placed on the spigot end of the pipe, and pressed firmly home into the inner socket B, which is splayed outwardly to



receive it. The soft ring insures a perfectly water-tight connection, and the joint may or may not be afterwards finished off with cement, as above described. This second form of joint is especially suitable for adoption in frosty weather, when ordinary cement joints would be useless, or for first-class work, where a sound connection and high efficiency is desired.

One great feature of this invention is that the pipes may be cut to any lengths without destroying the efficiency of the joint, as the roughness of the pipe where it has been cut only affords a firmer grip for the band A, which is made of a size to fit the pipe very tightly.

Claim.—The impossibility of any cement being left in the pipes, also the facility for cutting the pipes to any lengths without destroying the efficiency of the joints. And, further, the safety with which the second form of this invention may be laid in any weather, or in any soil, the flexible ring ensuring a water-tight joint even should the pipes sink after having been laid.

5,230. (1889.) A New or Improved Ozone Producing Apparatus. Hilarion Antoine Bernard Huguet De Vars, 22, Chaussée d'Antin, Paris. [6d.]

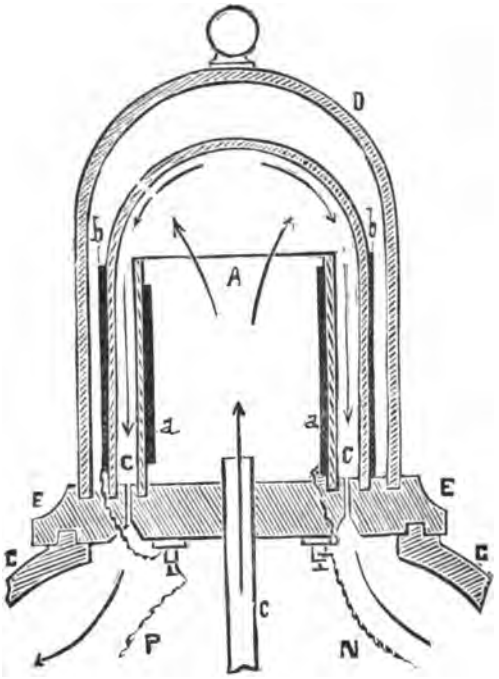
This invention relates to an apparatus for the production of ozone by an entirely new process. The apparatus of which the figure is a vertical section consists of an ebonite stand E, in which circular grooves are contrived to fit and receive the lower circumference of a glass cylinder A, the inner surface of which is covered with tin foil "a," and of a glass bell cover B, the outer surface of which is covered with tin foil b.

The cylinder A and bell cover B are separated from one another by a distance of five millimetres. The sheets of tin foil, a and b, are connected with an induction coil by means of conducting wires P N. Electricity is produced by the induction coil.

The wire P communicates with the positive pole of the induction coil, and the wire N communicates with the negative pole of it.

A glass bell cover D insulates and covers the whole.

Between the grooves in which the cylinder A and the bell cover B rest, there are openings C intended solely to allow the ozonized air to pass as fast as it is produced into the nickel-plated bronze bell cover G, where it is stored. A tube C passes through the ebonite stand E and brings the air forced along by a ventilator into the bell cover B. This stream of air strikes against the top



of the bell cover B and is obliged to pass between the bell cover B, and the cylinder A. If at this instant the induction coil is set in operation, the inductive electricity passes up the two wires P N, and the fluid seeking its equilibrium meets with a resistance in the thickness of the glass which causes the electricity to be reconstituted in the form of feeble sparks on the surface covered with tin foil, that is to say, on all that outer part of the cylinder A corresponding to the part of its inner surface covered with tin foil a. As also on all that part of the inner surface of the bell cover B corresponding to the part of its outer surface covered with tin foil b. The oxygen of the electrified air then changes into ozone.

Claim.—The ozone producing apparatus above described, and for the purpose mentioned.

LIST OF APPLICATIONS FOR PATENTS

RELATING TO SANITATION.

From June 3, 1889, to June 30, 1889.

[*This List is specially compiled for the* Sanitary Record *by Messrs. Rayner & Cassell, Patent Agents, 37, Chancery Lane, Holborn, from whom all further information relating to Patents may be had on application, gratuitously.*]

June 3.—No. 9,136. George Oliver. An improved method of ventilating sewers and drains.

No. 9,201. John Snowdon, the Younger. Improvements relating to toilet and cleansing soaps.

June 4.—No. 9,204. John Ebenezer Warren. Improvements in means or apparatus for use in filtering.

No. 9,207. Joseph C. S. McLay & Joseph A. Fisher. Improvements in the manufacture of cleansing and polishing material.

No. 9,256. John Shaw. Purifying sewer gas and ventilating sewers, drains, and water-closets, &c. (a deodorizer).

No. 9,275. Adolph Bidtel. Improvements in washing machines.

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June 8.—No. 9,512. George W. Hawksley. Improvements connected with the filtration of water, and in cleansing the filters.

June 11.—No. 9,593. James Lord & William Heys. Improvements in or applicable to water-closets.
No. 9,651. Chester Birge Davis & Edward Henry Riddell. Improvements in filtering apparatus.

June 12. — 9,705. Anna Leffler-Arnim. An improved article of dress as a substitute for corsets.
No. 9,707. Charles Newman Hill. Improvements in the construction and ventilation of waterproof garments.

June 13.—No. 9,726. Frederick Bolus. The sewer gas preventive pipe.
No. 9,777. Benjamin Nicholson & Thomas Palmer. Improvements in and apparatus for the treatment of sewage, fæcal matter, foul waters, or the like, for the purification or deodorizing thereof, and the obtainment of products therefrom.

June 14.—No. 9,876. William Matthews. The better bedding or laying of drain pipes or pipes generally.

June 17.—No. 9,884. Alfred Hossack. Improvements in chimney tops or cowls and ventilators.
No. 9,975. Alfred Julius Boult. Improvements in filters.

June 18.—No. 10,031. William Swinburn. A new and improved washing machine.

June 24.—No. 10,237. Job Deeley. Improvements in syphon flushing cisterns.

June 26.—No. 10,390. Robert Rhodes. Improvements in washing tubs.

June 27.—No. 10,419. Arthur Harrison & Walter Thomas Thorp. An improvement in making soap for washing purposes.

June 28.—No. 10,486. George Smith. The admission of fresh air through ventilators in sash frames.

June 29.—No. 10,562. Henry Brockmann. A combined tile and drain pipe.

SPECIFICATIONS PUBLISHED.—1888.

7,712. Harris. Lavatory basins. 8d.
8,491. Price. Expelling liquid from sewage, &c. 6d.
10,517. Rogers. Washing, &c., machines. 8d.
13,490. Shedlock. Washing machines. 8d.
11,249. Ross. Syphon drain pipes, &c. 8d.
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10,674. Holt & Holt. Urinal flushing cisterns. 8d.
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11,483. Planner. Disinfecting water-closets. 8d.
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1889.

1,613. Stevenson. Window ventilation. 8d.
4,651. Foulsham. Soap powder. 6d.
1,625. Del Guerra. Waterproof garments. 6d.
5,506. Shedlock. Washing machines. 6d.
3,050. Hartshorne. Corsets. 8d.

The above Specifications may be had from Messrs. Rayner & Cassell, Patent Agents, 37, Chancery Lane, at the prices quoted.

REVIEWS.

Treatment of Sewage by the Iron Process. By F. R. Conder, M.Inst.C.E. London: Hamilton, Adams & Co.

As this is an account of a patent process for the treatment of sewage, written by the patentee, it will be advisable first to briefly recapitulate, for the benefit of our readers, the advantages claimed for his method by the inventor, and afterwards to consider a little the evidence for and against the applicability of the process from a purely scientific standpoint.

First, then, the advantages claimed for his "iron process" by the patentee are thus summed up on pp. 21 and 22 of his pamphlet.

"It (the iron process) provides a means of rendering stable the solution of iron and its salts, in a manner which, four years ago, was declared on high chemical authority to be impracticable; and allows of the automatic supply of an exactly determined quantity of iron where required. It works with an altogether unexampled rapidity, utilizing the darkness of the drains and sewers, and the natural movements of the water supply.

"It is distinguished from all processes which are adopted to effect precipitation, in the fact that it splits, or resolves into harmless elements, the putrescible matters which are the cause of sewage pollution.

"As a secondary effect, it produces a fine deposit, chiefly consisting of mineral matter, which has no tendency to associate with water, or to form a semi-fluid or sludge. For equal quantities of matter removed from sewage the deposit formed by the iron process is only from one-eight to one-twentieth part of that formed by any existing method. The deposit thus produced is inoffensive, perfectly manageable, and of appreciable value.

"Obnoxious smells and sewer-gas are not produced below the points where the iron solution is mixed with the sulliage. No foul matter collects in the drains below such points, and no cleansing by hand is required.

"The purchase and preparing of land, the construction of large settling tanks, and the use of steam-pumps and other machinery are rendered unnecessary.

"Bacterial life, and the germs of disease, are destroyed in the sewage treated; and foul sewage is, in an extremely short time, converted into a scentless, limpid, and potable effluent."

Again, on p. 28, we find the following statement:—

"By the works now in process it is proposed to remove from the effluent at Barking, and at Crossness, 35·5 per cent. of the total solids found in the London sewage. The result, according to the figures of the Metropoliton Board of Works, will be the daily precipitation of 4,830 tons of wet and putrescent sludge. The iron process would remove more than twice the amount of organic matter, producing a dry deposit of less than one-fifteenth of that weight for equal quantities of matter removed."

Secondly, the following points seem open to criticism or remark in the above eulogies:—

(1.) The new process "provides a means of rendering stable the solutions of iron and its salts." The question naturally arises how? But, the process being a patent one, this question remains unanswered. We must content ourselves with the plain statement of facts. At first it appears as if a simple solution of ferrous sulphate were the great panacea, but we are afterwards told that "prepared" ferrous sulphate is supplied for household use, so that there is doubtless some trade secret connected with this preparation.

(2.) The process is said to "utilize the darkness of the drains and sewers," and these enigmatic words receive a partial explanation on p. 13, where we are told that iron salts produce different results upon sewage in light and darkness, but wherein the difference consists, and how the darkness aids the action of the iron salts in purifying the obnoxious matter, does not appear.

Thirdly, the present state of chemical science enables us to acquiesce in the probability of the following statement:—

(1.) That, in all probability, sewage would be completely deodorised by the application of a sufficient quantity of an iron salt to it; for the disagreeable odour of putrescent organic matter is mainly due to sulphur compounds, and the strong tendency of iron, especially in alkaline (ammoniacal) liquids, to combine with unoxidised sulphur, forming ferrous sulphide, is well known.

(2.) Again, the absence of bacteria might well be expected after treatment with a sufficiency of ferrous sulphate, this salt having decided germicidal properties.

Finally, however, in considering the whole matter, there are certain points which are not dwelt upon at all in Mr. Conder's pamphlet, but which seem to have an important bearing upon the practical application of his process.

It is mentioned, on p. 18, that no iron is found in solution in the effluent after the process has been applied to

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sewage, and this might well be, if care were taken to avoid the addition of an undue excess of the iron-salt, but we find no mention of any determination of the quantity of SO_4, the acid radicle of ferrous sulphate, in the effluent, neither is there any mention of any possible harmful effect which sulphates might exert upon fish, &c. Again, stress is laid upon the splitting up of the organic matter in sewage into its elements by the iron process. This may be all very well from one point of view, but it does not harmonise very well with our ideas of the economy of nature. If we persist in robbing the vegetable world of tons of organic nitrogen per annum, how can our agricultural population expect any improvement in their prospects?

The great advantage of the "iron process" seems to be the absence of any production of "sludge."

Bournemouth as a Health Resort. By A. KINSEY MORGAN. London: Simpkin, Marshall & Co. Bournemouth: E. J. Bright, M.R.C.S.

THIS work contains a tolerably complete account of the attractions of a favourite sea-side resort illustrated with seventeen plates, some poor and many very bad indeed.

The author estimates that the number of inhabitants in 1888 was 32,025, though whether this number includes visitors or not we are not informed; and, in proof of the popularity of the town, he mentions that "Bournemouth has more than once been made the winter residence of Royalty, and was chosen early in this year as a fitting spot to consummate the romance of the true love of the princely scion of a kingly house."

The pier, built in 1878, belongs to the town, and, as it is largely patronized, the gross receipts, which amounted in the year ending September 1888 to upwards of £4,811, considerably lighten the burden of local taxation, which at the present time, we are told, amounts to only 8s. 6d. in the pound. As to what is covered by this amount of taxation, we have no information.

The source of the Bournemouth water supply is at Longham, distant some five miles from the town, and the average quantity passed into the mains per head of the population amounts to from twenty-five to thirty gallons daily, and this is for domestic use entirely, as salt water is being used for street watering and flushing of sewers.

The author suddenly interposes three plates, one illustrating a house with every sanitary arrangement faulty, another illustrating a dreadful state of affairs existing some years ago in a house at Cannes, and the other showing a house with faulty arrangements avoided. Mr. Kinsey Morgan states concerning this last plate that it "does not profess to lay down a strict rule as to the best arrangements," and with this remark we cordially agree, though at the same time we doubt the advisability of publishing so incomplete an illustration.

The sewage of the town is discharged into the sea above high water mark, allowing of its continuous flow at all times. As we have indicated above, the sewers are flushed with salt water, and this water is obtained at a cost of three-halfpence per 1,000 gallons, as against one shilling and sixpence for fresh water supplied by the local company.

In 1878 the local commissioners adopted the Model Bye-Laws of the Local Government Board, extracts from which are given, followed by fourteen sanitary maxims, embodying the views of the author on sanitary science.

Examination of Water for Sanitary and Technical Purposes. By H. LEFFMANN, M.D., Ph.D., and W. BEAM, M.A. Philadelphia: P. Blakiston, Son & Co. 1889.

THE apology which the authors offer in their preface to this work is little needed, for there is quite sufficient originality about it to make it a valuable addition to chemical literature.

After a brief chapter on the history of natural waters, follows a very important one on the collection and preliminary examination of samples. The stone jar, generally employed in this country, is replaced in America by the "Penn Demijohn," which is simply a five-pint green glass bottle, encased in leather. If the stoneware be well glazed in the inside, and due attention be paid to cleanliness, there can be no objection to its use for collecting samples; but everyone knows how valuable a property is the transparency of glass for *ensuring* cleanliness, and in water analysis we should not grudge a slight increase in pecuniary outlay for the attainment of so important an end.

In determining the weight of the "total solids," we notice that the nickel basin is rejected, and a clean platinum basin is strictly enjoined for the purpose. As this is in opposition to the views of Mr. Wanklyn, it seems rather a matter for regret that the authors do not mention in what respect they found the nickel dishes unsatisfactory. The context, however, offers a probable suggestion on this point, viz. that it is the source of heat employed for evaporating the water that makes the use of nickel inadmissible. In place of the steam bath employed by Wanklyn, the authors advise the use of a low-temperature gas-burner, and it is well known that nickel vessels alter in weight when subjected to the action of coal-gas flames. As regards the necessity for cooling the rubber tubing attached to this burner (*vide* p. 20), it appears that if the metal tube were prolonged a little, this difficulty might be overcome.

In the determination of the nitrogen in ammonium salts and organic compounds, the method of Wanklyn and Chapman is adopted, but there are some modifications in the apparatus employed, which may suit the taste of some analysts. The methods recommended for the determination of nitrogen in nitrites and nitrates are not those generally adopted, but, though depending upon highly complex chemical changes, the processes employed are quite simple, and possess the advantage of working independently of one another, so that the nitrogen in nitrates may be first determined, and afterwards that in nitrites; whereas in the process by the action of nascent hydrogen from aluminium in potassium hydrate solution, all the oxidised nitrogen is converted at once into ammonia.

The quantity of nitrates is determined by converting phenol into trinitrophenol in presence of sulphuric acid, and then producing ammonium picrate, and measuring the quantity of HNO_3 present by the depth of the yellow colour observed. A standard ammonium picrate solution is kept for comparison. The results are said to be quite accurate.

For estimating the nitrites, the pink colour produced by acting upon nitrous acid, first with paramido-benzene-sulphonic acid, and afterwards with naphthylammonium chloride, is made use of.

Tidy's permanganate method is used for determining the oxygen-consuming power of natural waters.

For determination of dissolved oxygen, a modification of Mohr's method is used, the principle of which lies in the oxidation of ferrous hydrate to ferric hydrate by dissolved free oxygen. Excess of ferrous salt introduced is titrated with permanganate.

For approximate determination of dissolved free oxygen, the authors recommend an alkaline pyrogollol, the colour produced being compared with a standard solution of caramel.

The soap method for determining the hardness of waters is rejected as inaccurate (upon the authority of Hehner), and Hehner's method is substituted.

Lacmoid is used as an indicator, which is said to be unaffected by CO_2.

It will surprise people, whose student days commenced twenty years ago, to be told that calcic sulphate in solution in water leads to corrosion and solution of lead. It seems that calcium silicate is now looked upon as the most efficient protective agent against solution of lead in waters.

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The chapter on purification of drinking water embodies the results of the work of Dr. P. Frankland on this point. We learn (p. 93) that the view that calcic carbonate is held in solution in water by dissolved CO_2 is no longer tenable. However, as it is still acknowledged that water holding much CO_2 in solution will dissolve much $CaCO_3$, and that $CaCO_3$ is precipitated on boiling, we need not be much disturbed by this recent dictum.

To public analysts and sanitarians generally, this work will be of great value.

The processes employed are fairly simple, briefly and clearly described, and the whole treatment of the subject is brought well up to date.

Does Inebriety Conduce to Longevity? By NORMAN KERR, M.D., F.L.S., President of the Society for the Study of Inebriety, &c. &c. London: H. K. Lewis, 136, Gower Street, W.C. 1889.

THOSE who indulge and trade in alcoholic liquors seem to have laid the flattering unction to their souls that spirit is the Great Elixir Vitæ, and they claim to have established this proposition upon high medical testimony; for what better proof can exist than that afforded by one of a large number of tables provided by the collective investigation committee of the British Medical Association? This table, No. IX., attests that "total abstainers," taken from amongst an aggregate of some 4,200 males over 25 years of age, die at an average age of 51, whilst the "decidedly intemperate" live 9 months longer, and "free drinkers" more than 6 years longer, although the "habitually temporate" outlive the "decidedly intemperate" by 10 years.

Notwithstanding the inconsistency of these data with scientific observation and common knowledge, no attempt has been made by these willing believers to seek the key of this mystery, but the agreeable dream has been credulously adopted as sufficient to justify a perseverance in pleasant vices and not less pleasant profits. We are pretty well accustomed to this kind of selfishness, but we hardly expected that the Press, the "guide, philosopher, and friend" of the public, would in so many instances have asserted as a fact a conclusion drawn from a merely superficial glance at *one* table from amongst so many of the careful and elaborate report of the committee.

Dr. Kerr, amongst other objections, takes exception to the method of obtaining data as depending too much upon the memory of the contributors who were asked to revive their recollection of the cases by reviewing their certificates of the cause of death, given during the preceding three years; he would have preferred that the data should be collected during the approaching three years, and noted down with all the facts alive in the mind.

The true explanation of Table IX. appears to be, however, that, as total abstinence is a comparatively new practice, whilst drinking is an old one, it is presumable that the abstaining class consists of younger persons who, being individually endowed with fewer years, would necessarily yield, when taken in the aggregate, a lower average age at death from all causes than the drinking classes.

Dr. Isambard Owen, the secretary of the committee, states in the report that Table IX. "has been constructed simply by adding up in each class the ages given in the returns, which, it will be remembered, are the ages at death, and striking the average." If, then, the above explanation "is admitted, it will necessarily follow that the average age of total abstainers—I mean living total abstainers—at any time during the three years covered by this inquiry, was considerably less than the average age of the rest of the community; so that the class of abstainers has contained a proportion much greater than the average of individuals susceptible to early death, or, to put it in another way, has had a greater average liability to early death, apart from any question of alcohol, than any of the other classes." Other tables corroborative of this view adopt for all cases under treatment the minimum age of 30 and of 40, and by this process the average age at death of total abstainers is at once raised.

Again, there is a "table of decades," by which it is demonstrated that the heaviest mortality falls in the twenties, and continues to do so through the fifties. A glance at the incidence of death from different diseases peculiar to the alcoholic classes will tend to show their liability to fatal diseases, and help to correct the misinterpretation which has called forth Dr. Norman Kerr's paraphrase. We quote one example from the report:—"Cirrhosis in Group β" (age 40 to 50) "shows an overwhelming preponderance of major habits (of drinking), their ratio to minor habits being nearly 16 to 1. In Table XV. it will be seen that no case of cirrhosis occurs lower in the scale than B, C ('habitually temperate' and 'careless drinkers'), and very few below D ('free drinkers'), and more than 65 per cent in E and D ('decidedly intemperate' and 'free drinkers'). There is no disease which shows anything like such a marked preponderance of intemperate habits as cirrhosis."

Dr. Norman Kerr, whilst praising the reporters for extracting as many facts as possible from materials too scanty to afford the means of trustworthy generalization, may be understood to offer an explanatory essay as a popular index to the central point of error, hence there need not, in future, be any excuse for those who write for the public to exchange accuracy for sensation. Although the report itself tells its tale in so intelligible a manner as not to demand for its comprehension profound scientific or special knowledge, its numerous figures and elaborate tables require attention, it is true, and therefore they would make it for some persons not pleasant reading, but we cannot help thinking that careless and misleading statements are not pleasant reading either.

Nouveaux Éléments d'Hygiène. Par JULES ARNOULD, Médecin-Inspecteur de l'Armée; Professeur d'Hygiène a la Faculté de Médecine de Lille. Deuxième Edition. Paris: J. B. Baillière et Fils. 1889.

THIS is perhaps the most comprehensive work on hygiene existing in any language. Such a statement alone will sufficiently indicate the indefatigable industry which has enabled one author to survey the whole field of sanitary science within the space of one large volume. In many respects the work is an international review of the sanitary progress of the most highly civilized nations, for justice is done alike to English, French, German, and Italian research; and to those who are desirous of studying contemporary hygiene no more cosmopolitan work could be recommended. It is no pride of nation, but the strict truth, which leads us to assert that the English have so far led the van in sanitary progress. Whether we shall not shortly have to yield our place of honour to some other nation, is for those to decide who have most deeply reflected on the compatibility of real sanitary progress with modern democratic views and institutions. The supremacy of the English is perhaps most clearly shown in the chapters on sewerage, and it is impossible to avoid being struck by the fact that many of the French sanitary appliances suitable for domestic use are more or less faithful copies and reproductions of English inventions. Although the French have most undoubtedly been the principal gainers in these international exchanges of ideas, it is impossible for anyone to withhold his admiration from such examples of continental ingenuity as are afforded by the Liernur and Berlier systems of removal of excreta—systems which combine adaptation to the wants and habits of the people with adherence to recognized sanitary rules and requirements.

It is difficult to specify any particular section of a work—all of which is compiled with care, exactitude, and thorough comprehension of detail—as being more noticeable than the rest, but the description of the lower micro-organisms (the moulds, fungi, and bacteria) is replete with practical information, and the treatment of the pathogenic microbes is sensible and up to date. The

author is evidently rather sceptical as to the influence of milk in causing epidemic outbreaks—an influence which is no doubt more largely recognized in this country than in France. The relation of the alkaloidal substances—the ptomaïnes and leucomaïnes—to saprophytic microbes, and the bearing of these products of bacterial life upon disease production are very thoroughly considered.

The first portion of the work treats of general hygiene, included in this term being the consideration of the sanitary relations of earth, air, water, micro-organisms, houses, clothing, food, &c. In the second part the special hygiene of infancy, schools, villages, towns, industries, barracks, ships, prisons, and hospitals, are fully considered; whilst in a third part the organization of a sanitary service, and the leading facts of sanitary administration as carried out in the principal countries of Europe and the United States, are carefully placed before the reader.

There can be but little doubt that Dr. Arnould's work will go through many editions. As a text-book and a book of reference it will be consulted by the workers in sanitation of all countries, for it may truly claim to rank as an encyclopædia in all matters pertaining to hygiene and public health.

NOTES ON BOOKS.

The Treatment of Female Inebriety in the Cultured Classes. By Mrs. L'Oste. London: H. K. Lewis. 1889.

In the interests of public health the sobriety of women is of vital importance. If the mothers of the coming race should unhappily be, to any substantial degree, drunken, a disastrous crop of mental and physical mischief from excess in strong drink would assuredly be reaped. The heredity of alcohol and of allied anæsthetics would so accumulate that the *physique* and *morale* of the nation would be sensibly deteriorated. Inebriety has been steadily increasing among females in England during the past decade, and the appearance of such *brochures* as this is therefore timely. Mrs. L'Oste speaks from more than a quarter of a century of experience in treating cultured inebriate ladies, and it is hopeful to find that some 30 per cent. of the cases have been permanently cured. This success has been achieved by the treatment of the inebriety as a disease, by seclusion from temptation, by strict abstention, and by appropriate medical care.

Our Duty to Our Filthy Neighbours in Southern India. A Lecture delivered to the Ootacamund Young Men's Christian Association, by Surgeon-General G. Bidie, M.B., C.I.E.

Wherever English rule has been established, some effort has been made to bring home to the minds of the subject races a glimmering of the great truths of sanitary science. In our dealings with Oriental nations, any efforts in this direction are too often at variance with religious and caste prejudices, and have to take into account the dense ignorance in which large masses of the population are steeped. The schoolmaster is abroad in India as elsewhere, and many improvements in social condition may be secured to future generations from the general spread of education. In the meantime popular lectures of the type of Dr. Bidie's are likely to prove of the greatest utility. A knowledge of the reason why certain practices are bad and reprehensible is likely to secure a more willing obedience to sanitary regulations designed for the prevention of disease dissemination by unwholesome conditions of air, soil, and water. The laws of the early Mahomedan and Hindu sages contain many rules and precepts for the protection of water from pollution and for the prevention of epidemic diseases, forming codes analagous in many ways to those enjoined on the Hebrews by the law-giver Moses; but these precepts have fallen into disuse, if they ever were practised, and it has remained for the nineteenth century exponent of western civilization to point out to our Indian fellow subjects that the sanitary regulations of the present day are in strict conformity with the teachings of the founders of those religions, which at first sight appear to offer an insuperable obstacle to all sanitary advancement. Much has been done in India, but vastly more remains to be accomplished; and any effort to break the natives of the filthy habits which are the legacies of generations of ignorance and neglect is deserving of the highest praise.

POLICE COURT CASES.

SALE OF FOOD AND DRUGS ACT (1875).

Adulterated Milk.

Before Mr. Bruce, at the Town Hall, John Whitaker, of Red House Farm, Whinmoor, near Leeds, was summoned under the Food and Drugs Act, for having sold adulterated milk. Sir George W. Morrison, Town Clerk, prosecuted. Inspector Walker procured a sample of milk which the defendant was delivering, of which on analysis was found to contain 15 per cent. of added water. On another occasion, another sample was taken, which was adulterated with water to the extent of 17 per cent. Defendant stated that it was the fault of one of his servants, whom he had discharged. He was find 40s. and costs in each case.

MARGARINE ACT (1887).

Heavy Penalty.

At the Marylebone Police Court, on June 26, Messrs. Webb & Co., of No. 161, High Street, Camden Town, were summoned by Mr. W. H. May, one of the inspectors under the Food and Drugs Act, 1875, for the parish of St. John, Hampstead, for selling by retail, at their branch establishment, No. 128, High Road, Kilburn, one pound of margarine without the same being delivered to the purchaser in or with a paper wrapper with the word margarine printed thereon as required by sect. 6 of the Margarine Act. The case having been proved, the magistrate (Mr. De Rutzen) fined the defendants £20 and 2s. costs.

PUBLIC HEALTH ACT (1875).—Sec. 6.

Tipping Refuse on Private Property.—Alleged Nuisance at Stanley.

At the County Magistrates' Court, before Messrs. John Bingham and W. H. Anderson, a case was heard arising out of a summons taken out by the West Derby Local Board, under the 6th section of the Public Health Act, 1875, against the Stanley Land and Brick Company, for committing a nuisance by depositing in a large clayhole at their works certain ashpit refuse alleged to be detrimental to the health of the people living in the immediate neighbourhood. Mr. Layton (clerk to the West Derby Board) appeared in support of the information, and Mr. Segar represented the defendant company. The case for the complainants was that the defendants occupy a large tract of ground between Prescot Road and Edge Lane, and carry on an extensive business. Sunk in the land there, there is a large excavation, which the company are very desirous to fill up, in order to enable them to make a new roadway from their works into Prescot Road, Stanley. With this purpose in view, they have been in the habit of having Liverpool Corporation ashpit refuse deposited therein. Dr. Carter, the medical officer of health for the Board, objected, alleging that the material tipped into the hole constituted a nuisance, and was injurious to health. The doctor was now called, and described the stuff which he had seen cast into the excavation on the occasions of his different visits to the place. His statements were corroborated by the inspector of nuisances to the Board.—In reply to Mr. Seager, Dr. Carter said he was not aware that the Board had deposited its midden refuse in the

same excavation, or that in putting stuff of this description elsewhere they had committed a nuisance. Mr. Dobson, of Church Road, Stanley, stated that for some time past a most offensive smell, which pervaded his house, had proceeded from the pit complained of. Mr. Kenny, coal merchant, who has an office in Prescot Road, Stanley, testified that a bad odour always came from the carts which were carrying rubbish, &c., to the pit.

Mr. Seager, for the defence, said that the company required to make a road from their works to Prescot Road, which would enable them to cut down a large bank of clay which lay between the present excavation and the railway; and when this was done they would get from the London and North-Western Railway a siding which would enable them to remove the bricks (which they made in enormous quantities) with greater facility and economy than they did at present. And therefore it became a matter of absolute importance to them (if they were not breaking the law) to be allowed to carry on the operation of filling up the pit, which they had been doing for a considerable time past. No doubt in time the area would be filled up, but it would not be utilised for building purposes for the next fifteen or twenty years. He earnestly pressed upon the bench, if they had any doubt, not to come to a conclusion until they had visited the place and seen for themselves whether a nuisance existed or not. He would call medical and scientific evidence to prove that the ashes deposited became innocuous by a process of fermentation, the heat in a tall pile of refuse such as that at Stanley becoming so great that it actually destroyed anything noxious in the shape of animal or vegetable matter; and, moreover, in the course of two or three years the mass, if opened, would be perfectly harmless, and safer to build upon than the ordinary clay foundation. Then, every precaution had been taken to pick out vegetables or other deleterious stuff which might be found in the refuse; and carbolic acid and other antiseptics were constantly used to deodorise the heap. He would also produce testimony to show that the excavation was in an open space, far removed from dwelling-houses, and neighbours would testify that they did not suffer from any smells arising from the refuse.

Dr. William Williams stated that he did not consider it possible that there could be any danger to health arising from the excavation, considering the position of the houses in the locality. He was convinced that the proper way of dealing with this ashpit refuse was to put it in large heaps, so that an amount of heat would be developed sufficient to set it on fire; and, in the present case, all vegetable and animal matter was destroyed. The heap was covered on the surface and sides with a thick layer of perfectly dry rubbish from the furnace. The smell was similar to that which came from an average ashpit refuse heap. Dr. Damer Harrison gave corroborative evidence. Mr. Hedley, secretary to the company, and John M'Keckney, chief inspector of the scavenging department of the Liverpool Corporation, also spoke to the innocuous character of the stuff deposited, the latter stating that in the course of several years it was the best foundation for houses. There were, he added, large areas in Liverpool built upon such matter, and he believed they were healthier than houses built on clay. Mr. Segar: Are there tips very much nearer houses than this one, and used by the West Derby Local Board?—Yes, Sir. Professor A. Norman Tate, analytical and consulting chemist, deposed that he had taken samples from the heap at Stanley, but found no noxious ingredients to an extent that would be deleterious to health. As to the odour, it was a modified ashpit smell, not so bad as an ordinary ashpit. Mr. William Wethered, managing director of the company, described the deodorising process adopted, and the precautions taken to remove vegetable matter.

The magistrates came to the conclusion that there was a nuisance, and they must call upon the defendants to abate it, in the terms of the notice. Mr. Segar asked them to state a case for the court above upon the question as to whether the evidence with regard to the Local Board itself tipping (which they had excluded) was or was not material to the inquiry, which the magistrates consented to do, and Mr. Segar undertook to cease all further tipping, and cover up the centre of the heap pending the appeal.

Abatement of Nuisance.

The owners of 14, Little Hunter Street, Borough, were ordered by the Southwark magistrate to remedy the unsanitary condition of those premises within seven days. Dr. Waterworth, medical officer of health, described the condition of the premises as "frightful," and said they were totally unfit for occupation.—Mr. Anscombe, inspector of nuisances, who had taken out the summons, said the Bridge Houses Estate were the owners, and he had repeatedly written to Guildhall, but the authorities refused to take any steps to abate the nuisance.

Over-crowding.

John Madigan was summoned in respect to the overcrowding of a living-room at 46, Ifield Road, Kensington. The room was inhabited by the defendant, his wife, and a grown-up daughter. It was 12 feet by 9, and only contained 164 cubic feet, whereas the law required 400 cubic feet for each person. The Bench imposed a penalty of 10s., together with 1s. a day from June 14, the date of the service of the vestry's order to abate the offence. The owners of houses in Bloomfield Yard, Mary Place, Notting Hill, and in St. Katharine's Road were also summoned. In one case, the sleeping room was an accumulation of rags, hare-skins, and other things, the stench being unbearable. The tenant was a collector of rags and bones, and he deposited the whole of his refuse in his apartment, his bed occupying a position in a corner of the room. In another case the inspector stated that there was an absence of all necessary accommodation, the inmates being compelled to place the soil in the dustbin. The Bench granted orders for the abatement of the nuisances forthwith.

Bad Meat.

At the Guildhall, before Mr. Alderman Evans, Frederick Willer, a horse slaughterer, of North Walsham, Suffolk, was summoned at the instance of Chief Inspector Wylde for having sent to the Central Meat Market the carcass of a cow diseased and totally unfit for human food. Mr. Baylis prosecuted on behalf of the Commissioners of Sewers; the defendant was represented by Mr. E. C. Rawlings. Evidence having been given, the Alderman imposed a fine of £50 and £3 3s. costs; in default two months' imprisonment.

At the Rochdale Police Court, Thomas Bibby, butcher, Drake Street, was charged with exposing for sale a forequarter of a cow and a liver in an unfit state for human food. Dr. Henry, medical officer of health, stated that the meat was in a decomposed state, and the liver almost rotten. The accused was fined £20 and costs, or, in default of payment, four months' imprisonment.

Deservedly Heavy Penalties.

At the Guildhall, London, before Mr. Alderman Faudel Phillips, John Stafford, described as a butcher, of 109, Wharf Street, Leicester, appeared to a summons to answer the charge of sending to the Central Meat Market four quarters of beef diseased and totally unfit for human food. Mr. Baylis prosecuted on behalf of the Commissioners of Sewers. Inspector Allen having given evidence as to the seizure, Dr. W. Sedgwick Saunders (medical officer of health for the City) said he examined this meat on May 16. It was emaciated, dark, wet, and emitted an offensive odour. It was the carcase of an animal that had been ill for some time. Any person who knew anything about meat would see that it was unfit for food. The defendant, in reply, said the animal was perfectly sound. The Alderman, however, had not the slightest hesitation in coming to the conclusion that the accused knew the meat was not fit to be eaten. This kind of thing—selling poison in the shape of food—must be stopped.

He had power to impose a fine of £20 for each piece. He would not go to the full length, but fine him £15 for each; that would be £60 and £4 4s. costs. The defendant asked the Alderman to give him time to pay. This he refused to do, and the defendant was removed to the cells.

Before Mr. Alderman Davies, Thomas Craig, a butcher, of 109, Derby Street, Burton-on-Trent, was summoned for sending diseased meat—two pieces of beef—to the Central Meat Market. Mr. Baylis prosecuted on behalf of the Commissioners of Sewers, and said that the defendant bought a cow for £8 from a farmer named Cotton, who told the accused that it was in a poor condition. He, however, had it killed and dressed, and sent one side to Messrs. Badam & Co., of the Central Meat Market, where it was afterwards seized. Charles Allen (inspector of meat) gave evidence as to the seizure. Dr. W. Sedgwick Saunders (medical officer of health for the City) deposed that he examined the meat in question, and that it was in an extremely foul condition, bearing evidence that the animal when killed was suffering from long-standing disease. Any butcher who had dressed it must have known at once the condition it was in. For the defence it was stated that the defendant was not a practical butcher and had no knowledge of meat. The Alderman said this was an extremely bad case. He should impose the full penalty of £20 for each piece of meat—that would be £40, and costs. In default, defendant would have to go to prison for six weeks. The money was paid.

Bad Mussels.

At the Manchester City Police Court, before Mr. F. J. Headlam, a mussel merchant, named Thomas S. Hutton, of Kingston-upon-Hull, Yorkshire, was charged with having consigned three bags of mussels, which were unfit for human food, to Joseph Sykes, fish salesman, of Manchester, who was also charged with having the mussels in his possession.—Mr. Hudson, solicitor to the Corporation of Manchester, prosecuted, and the defendant was represented by Mr. Byrne, barrister. Peter Maguire Peterson, mussel merchant, Hull, said that a vessel containing a cargo of mussels arrived at the port. He met the defendant there, and during a conversation he asked him if he had many mussels consigned to him in the cargo. He said he had some, and the defendant at once said they were rotten and ought to be condemned. On looking over the cargo he found some good and some bad, but the majority of the mussels were unfit for human food, and the defendant remarked, "The stink is fit to knock you down as you go alongside the ship."—Cross-examined by Mr. Byrne: He sent a portion of these mussels away, but they were not intended for human food. They were for fish baiting. He had known mussels to be good at the start of a railway journey, and to perish on the road.—Fred. Altas, assistant to the last witness, said he saw Hutton giving instructions for the loading of a portion of the mussels from the ship on to a railway lorry. After he had sent them he said, "I wish I hadn't sent them, as they all ought to be condemned."—Joseph Sykes, fish salesman in the Fish Market, Manchester, said he sold mussels on behalf of the defendant. On May 14, he received a consignment of five bags of mussels from Hutton. He sold two bags, and the other three were seized by Mr. Atkinson. One of the two bags was afterwards brought back by the purchaser.—By Mr. Byrne: On the same day he had another consignment from the defendant's brother from Hull. They would be part of the same cargo, and they were all good.—Thomas Dickinson, inspector of nuisances for the city, said he seized the three bags of mussels as stated by the last witness. They were afterwards condemned by a magistrate and destroyed.—Mr. Bryne said the defendant's explanation was that at the time these mussels were sent from Hull they were all right. He denied having the conversation with Altas spoken to by that witness. So far as he could ascertain, the mussels were good when they left Hull, and it was possible, he submitted, for them to go bad in their transit.—Mr. Headlam fined the defendant £5, and ordered him to pay £8 costs, or, in default, a month's imprisonment.—The case against Sykes was withdrawn.

Creating a Nuisance.

At the Old Hill Police Court, Rowley, John Hadley, of Ramrod, Rowley, was charged with creating a nuisance by placing some offal on land near Bell End. Mr. Albright prosecuted on behalf of the Rowley Local Board. The inspector of nuisances (Mr. Nicklin) said that the stench could be perceived three hundred yards away. Dr. Beasley spoke to several complaints having been made to him of the nuisance by inhabitants in Mincing Lane and Bell End. Defendant was fined 12s. 6d., and ordered to abate the nuisance.

Nuisance Inspector or Sanitary Inspector?

At the Wigan Borough Police Court, on June 3, before Messrs. W. Roocroft and W. B. Johnson, Thomas Myers, butcher, Schofield Lane, was charged, at the instance of James Richard Leggatt, chief sanitary inspector for the borough of Wigan, with having, on May 23, unlawfully exposed for sale the carcase of a pig, intended for the food of man, on the premises of Patrick McLoughlin, the pig being unfit to be used as such food. The Town Clerk prosecuted, and Mr. W. Lees represented the defendant.

The Town Clerk said the summons was taken out under the 116th section of the Public Health Act, which stated that any medical officer of health, or inspector of nuisances, might at all times examine any animal or carcase exposed for sale or deposited in any place for preparation for sale and intended for the food of man, and, if proved to be unfit for human food, either of those officials might seize the animal or carcase and carry it away to be dealt with by a justice of the peace. In this case Mr. Leggatt, the chief sanitary inspector of the borough, on the morning of May 23, visited a wash-house at the rear of the Black Swan Inn, Scholes, and found the carcase of a pig, which was dressed for the purpose of sale. Having satisfied himself that the animal was not fit for human food, he called in Dr. Barnish, the medical officer of health, who examined the pig, condemned it, and ordered it to be seized. Mr. Wall, one of the magistrates, afterwards saw the pig, and being convinced as to its unfitness for food, ordered it to be destroyed. He (the Town Clerk) believed there was no doubt that the pig was the property of Myers, as he admitted to the medical officer and the sanitary inspector that he had purchased it. Therefore, the only question for consideration was as to whether the pig was really unfit for human food, and if he proved that he would be entitled to ask a substantial penalty to be imposed.

James Richard Leggatt, examined by the Town Clerk, said he was the chief sanitary inspector for the borough of Wigan.

Mr. Lees at this point demanded proof of Mr. Leggatt's appointment by the Corporation. A document was handed in by the Town Clerk, but Mr. Lees said this was not the appointment. It was a sheet of instructions empowering Mr. Leggatt to take special proceedings under the Public Health Act, but providing he was legally appointed he needed no such special instructions. What they required was proof that Mr. Leggatt had been legally appointed as nuisance inspector.

Witness said on Thursday, May 23, about 1 o'clock in the morning, he went to a wash-house at the back of the Black Swan Inn, Scholes, which was tenanted by Patrick McLoughlin. He had received information from a constable which led him to make the visit. Witness roused the landlord and asked to be allowed to look inside the wash-house, but it was not till 6 o'clock that he could do so. Myers himself came at 5 o'clock, and asked for his pig. Witness told him to come again at 6 o'clock, when the landlord would be on the scene.

Mr. Roocroft: Were you there all the time from 1 o'clock in the morning?

Witness replied in the affirmative, and continuing said

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that Myers come again at 6 o'clock and unlocked the wash-house door in the presence of witness and the landlord with a key he had in his pocket. Witness then saw the pig hanging from a beam in the ceiling. Its interior had been removed, and it was ready for sale. The flesh was wet and flabby, the inside inflamed and in an early stage of decomposition, and altogether it was in a very poor condition. Witness told Myers that the carcase would be detained pending the arrival of the medical officer of health, and defendant answered "All right." Dr. Barnish arrived at 20 minutes past 9 and made a careful examination of the pig in Myers' presence. He instructed witness to seize the pig as it was totally unfit for food. Witness left the carcase in charge of a policeman and went for a magistrate. Mr. Wall, who went back with him, saw the pig and expressed himself satisfied that it should be destroyed. After receiving orders to that effect from Mr. Wall, he took the pig down to the Miry Lane depôt and saw it destroyed in the large furnace. Myers had the key of the wash-house the whole of the time and owned the pig was his when he came to the wash-house at 5 o'clock in the morning.

The witness, cross-examined by Mr. Lees, said that Mr. Wall ordered the seizure and destruction of the carcase at 20 minutes past 10 on the morning of the 23, but he did not sign the order till the following morning. Witness asked Myers for the intestines of the pig, and was told that he did not know where they were. The defendant said he had bought the pig at "Club Row," commonly known as Vauxhall Road. He told witness nothing with respect to the price. Witness could not tell what was the matter with the pig, but the coating of the back inside was very much inflamed. He looked at the back of the ears but saw no eruptions. He could not say what condition the pig was in when it was brought to the wash-house on the previous evening, but he was of opinion that the weather, as it was that night, could not have affected the flesh so as to cause it to go bad. He did not think the atmospheric influences had anything to do with it.

William Kay, called by the Town Clerk, said he took the minutes of the committees of the Wigan Town Council. He produced the minute book of the Sanitary and Sewerage Committee, which showed that on February 5 it was resolved that James Richard Leggatt be appointed to the post of chief sanitary inspector. He also produced the minute book of the Town Council, from which it appeared that on February 6 it was resolved that the minutes and proceedings of the Sanitary and Sewerage Committee be adopted and confirmed.

Mr. Lees asked to see these minutes, and after examining them said they did not appear to have been signed by the mayor.

Witness acknowledged that they were not signed, but explained that the Council minutes were not signed until the end of the year, when they were all signed at once. He then stated that he was present at the meeting of the Town Council mentioned.

Mr. Lees hoped the Town Clerk did not take it for granted that he accepted that as proof of the appointment. He asked witness if there was any appointment of Mr. Leggatt under the seal of the Corporation?

Witness: No.

Mr. Lees further inquired if the signature of the chairman was on any of the minutes?

Witness: Not on the Council minutes.

Dr. Barnish, the medical officer of health, was then examined by the Town Clerk. He corroborated the evidence given by Mr. Leggatt, and described the flesh of the pig as pale, soft, and flabby, and somewhat wet in certain parts. In cross-examination, witness said that if it had been a healthy animal it should have been three days before the flesh showed any signs of decomposition. The opinion he had formed was that the pig had died from parturian fever. There was milk in the teats.

Mr. Lees, in commenting upon the evidence adduced, said that under the 116th section of the Public Health Act the nuisance inspector had extraordinary powers, and it was essential that in a case like this there should be no doubt as to his appointment. Unless he had been appointed under the Corporate common seal he could not act. If it was necessary that all their officers should be legally appointed, how much more essential was it that an official vested with such powers should have a proper appointment under the common seal. In this matter his friend was bound by the Public Health Act, which said itself that minutes of proceedings should be taken as evidence only when signed by the chairman of the meeting. There must be duly signed minutes of the proceedings, and his friend had failed in this respect. There was another point which sprung up. Even supposing that Mr. Kay was present, he had yet to prove that the meeting was legally convened and held. All this went to show that Mr. Leggatt was not legally appointed, and if that was so, he was not the person to take those proceedings. Who was the person? The words of the section said that the prosecuting official must be either the nuisance inspector or the medical officer of health, and he was of opinion that the appointment of the former official had been proved years ago in that court by Mr. Peace. He ventured to say that appointment had never been revoked, and that it was still under the seal of the Corporation. The prosecutor in this case was the "chief sanitary inspector," and not, as required by the Act, the nuisance inspector of the borough.

Mr. Ellis suggested to the Town Clerk that the case should be withdrawn, and a fresh summons taken out.

The Town Clerk adopted the suggestion, and withdrew the case.

Mr. Lees applied for costs, but Mr. Roocroft refused to grant this request.

CORRESPONDENCE.

Audi alteram partem.

[*All communications must bear the signature of the writers, though not necessarily for publication.*]

LECTURES ON SANITATION.

I NOTICE with great pleasure the reports and papers of the work being carried on by the different associations of sanitary inspectors, but regret to note that the meetings of these associations are all private ones, to which members only are admitted, and also that the papers given at these meetings can only be heard or read by very few persons. It would, in my opinion, be a great deal better both for inspectors and the public at large if more meetings were held and public lectures were given in different towns on various sanitary matters, such as drainage, ventilation, foods, &c. I think that the only way for sanitary inspectors to improve their position as public officers is by educating the public and waking them up to the dangers by which they are surrounded, and to the importance of having good drainage, pure air, and wholesome food.

I firmly believe it is only by bringing the people to think about such matters as those I have mentioned that the position of sanitary inspectors can be improved. I hope some abler pen than mine will take up this subject.

Bury, May 25, 1889. J. T.

DISPOSAL OF HOUSE REFUSE.

I HAVE noticed in your last issue the letter of Mr. Edward Taylor, of Rochdale, calling into question the accuracy of my description of the Rochdale Corporation Manure Works, contained in a paper upon the above subject, read by myself before the Association of Sanitary Inspectors, and published in the SANITARY RECORD of April 15. In that letter it is stated that "the description has some little resemblance to what for a short period occurred some fifteen or sixteen years ago." Not-

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withstanding the sweeping terms of Mr. Taylor's letter, I maintain that the particulars given in my paper are substantially a correct version of the method adopted when the works were first opened, but it appears that at the present time the ashes are not mixed with the excreta because they were supposed to reduce the strength of the manufactured manure, and consequently rendered it of less value for agricultural purposes. The moisture is now removed by evaporation alone, instead of by absorption and evaporation as before.

As the Rochdale authorities apparently fear that their reputation as manufacturers of manure may suffer, I shall be glad if you will allow this explanation to appear.

June 4, 1889. A. SALMON.

SANITARY INSTITUTE EXAMINATIONS FOR INSPECTORS OF NUISANCES.

THE model answers given in last months issue contain a great deal that will not be agreed to by Inspectors with any practical experience.

The statement in answer to Question 1, that it is the duty of inspectors to act "generally under the medical officer of health," requires much explanation and qualification to make it fit in with existing facts. It would have been better to have said that it is the duty of the Inspector to endeavour by all means in his power to carry out the recommendations of the medical officer.

The theory that the inspector is or should be subject in all things to the medical officer is probably based on a part of the first clause of the Local Government Board Order of March 1880, defining the duties of inspectors. "So far as authorized" by the sanitary authority, the inspector shall perform his duties under the orders of the medical officer of health.

He is likewise subject to the orders of the authority he serves, to those of the Local Government Board, and, so far as his duties are defined by the Public Health Act, he is bound to carry out his work independently of special orders from any source.

It was suggested in an article in the *Record Diary* that the authority should be asked to pass a resolution making the inspector generally subordinate to the medical officer. It may be pointed out that such a resolution would be distinctly contrary to the spirit of the order above quoted, which states specifically that the inspector is responsible for obedience to orders which may come from four different sources, and no order of a sanitary authority can relieve him from these responsibilities.

In practice it is not usual for a sanitary authority to pass a resolution under the clause above referred to; nor is it usual to require the inspector to receive all orders from and make all reports to the medical officer. He makes his reports direct to and receives orders direct from the authority he serves.

It is essentially necessary that the inspector should fully understand his position and responsibilities, as the following instance will show:—

A case of infectious disease has occurred in an urban district (not possessing powers under the Water Act), the medical officer of health wishes to have the house immediately disinfected in a certain manner, by or under the eye of the inspector, and a sample of well-water taken. He gives the inspector instructions to do these things.

Now as regards the well-water, the inspector has no legal right to enter and inspect, if he takes a sample he is legally a thief and a trespasser.

With reference to disinfection. The law makes no provision for *immediate* disinfection. The medical officer must certify that disinfection is necessary. The authority must meet (perhaps in three weeks' time) and sanction the service of a notice on the owner or occupier. The Act gives no power to prescribe how it should be done, and affords no information as to how the inspector is to procure entry and inform himself of what has been done; and it is only upon default of owner or occupier, and after another sitting of the authority, that the inspector can procure power to enter and do what is required.

Would it not be the better and more dignified course for the medical officer to confine his action to recommending what he deemed necessary, and leave the inspector to carry out an extremely difficult and delicate duty to the best of his power, unfettered by any attempt to impose on him orders that cannot legally be enforced.

What is true in the case of disinfection cited will be found equally true in many other instances where the medical officer and inspector have to work together. It might be advisable to have the law and the orders regulating the duties of inspectors so altered as to enable them to be held responsible solely to the medical officer as superior officer; but, as things stand at present, any inspector who forgets or overlooks the fact that he is separately and independently responsible for his own acts is likely, sooner or later, to get into serious trouble.

There is hardly one of the model answers which is not open to the objection of being either inaccurate or omitting important points. I will note a few.

Question 5.—Last paragraph but one says that the inspector should serve a notice under section 91. He has no power to do so; the authority (when they sit) must receive the inspector's report, and with them lies the decision as to whether notice should be served or not. The last paragraph states that an inspector finding a stopped drain, and being unable to satisfy himself of the nature of the stoppage, should serve notice under section 102 of the Act. That section has no bearing whatever on such a case.

Question 8.—In case of discovery of unsound food exposed for sale. The Act says nothing about waiting for sitting of Petty Sessions or of a Police Court to have meat condemned, and not a word of carrying meat to the medical officer for condemnation. The orders of the Local Government Board say that the medical officer should be called in only in cases of doubt. It is self-evident that the action taken must of necessity be immediate, the magistrate's inspection must be made at once, and the medical officer's also, if he be available; but it may be that he holds a combined charge, and is travelling at the other end of the county.

Question 10.—The answer should at least have referred to the most important duty in connection with dairies, that of preventing infected persons from handling milk or milk vessels. The answer referring to slaughter-houses quotes the orders of the Local Government Board, laying down the conditions that should be required in recommending new buildings for license as slaughter-houses, a duty that will generally fall to the medical officer of health or surveyor, but it omits nearly all reference to the special duty of the inspector in connection with slaughter-houses, the carrying out of the bye-laws. The answer does not apply at all to registered slaughter-houses, by far the more numerous class. The height of tank above floor is incorrect, it should be six feet and not six inches.

Question 11.—Town and trade refuse capable of being dealt with by a refuse destructor seems to be confused with midden and pan contents that may be usefully applied to the land. It might be a part of the duty of an inspector to supervise removal of refuse for disposal on land, but the working of a destructor would be the business of the surveyor. Ashes would be of no use to a brickmaker for burning bricks, and the cinders which might be so used would be of no use to farmers for sowing purposes. Two separate things are here mixed up as one. It is not usual to sift that description of house refuse which is applied to land as the answer seems to infer.

A RURAL INSPECTOR.

CLEETHORPES SEWERAGE.—The members of the Local Board were recently entertained at dinner by Mr. Clark the contractor, to celebrate the successful completion of the Beaconthorpe Sewerage Outfall Works. Mr. W. H. Radford, A.E., of Nottingham, has been the engineer to the works.

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NOTICES OF MEETINGS.

INTERNATIONAL CONGRESS OF HYGIENE AND STATISTICS.

The first meeting of the General Committee, which includes representatives from the universities of London, Oxford, Cambridge, Glasgow, and Aberdeen, the Royal Colleges of Physicians and of Surgeons of London, Edinburgh, and Ireland, the Sanitary Institute, Society of Medical Officers of Health, British Medical Association, Royal Institute of British Architects, Institution of Mechanical Engineers, Royal Institution of Great Britain, British Association for the Advancement of Science, Society of Arts, Royal Colonial Institute, and many other leading societies, have been held in the British Museum, Sir Spencer Wells, Bart., in the chair. An organizing committee was appointed, consisting of Sir Douglas Galton, K.C.B., F.R.S., Professor W. H. Corfield, M.A., M.D., Dr. E. Frankland, Mr. Ernest Hart, Professor T. Hayter Lewis, Dr. E. D. Mapother, Dr. F. J. Monath Shirley, Mr. F. Murphy, and Dr. R. Thorne Thorne, with power to add to their number, to organize arrangements for the meeting which is to take place in London in 1891.

THE ASSOCIATION OF PUBLIC SANITARY INSPECTORS OF GREAT BRITAIN, NORTH-WESTERN DISTRICT.

President.—A. Carpenter, Esq., J.P., M.D., C.S.S., Croydon.

Vice-President.—J. Stopford Taylor, Esq., M.D., Medical Officer of Health, Liverpool.

EXECUTIVE COUNCIL.

Chairman.—Wm. Bland, Inspector of Nuisances, Barton-upon-Irwell (rural).

Vice-Chairmen.—G. M. Lloyd, Surveyor and Inspector, Higher Bebington; R. A. Houghton, Chief Inspector of Nuisances, Birkenhead; T. Broughton, Inspector of Nuisances, Garston.

Council.—Isaac Dixon, Surveyor and Inspector, Wavertree; H. D. Mathias, District Sanitary Inspector, Liverpool; T. Wallis, Surveyor and Inspector, Wirral (rural); Hy. Wharton, Inspector of Nuisances, Waterloo; G. W. Price, Pros. Sanitary Inspector, Liverpool; Watkin Hall, Surveyor and Inspector, Great Crosby; J. Roscoe, Surveyor and Inspector, West Derby (rural); Wm. Jones, Assistant Surveyor and Inspector, Bangor; W. Stansfield, Inspector of Nuisances, Newton Heath; J. A. Davenport, Surveyor and Inspector, Nantwich (rural); Jos. Brooks, District Sanitary Inspector, Liverpool; A. Salmon, Surveyor and Inspector, Wallasey.

Hon. Treasurer.—Thos. Turner, District Sanitary Inspector, Liverpool, 14, Walmsley Street, Egremont, Cheshire, to whom all subscriptions should be paid.

Hon. Secretary.—A. Taylor, Sanitary Inspector, Wallasey, 16, Walmsley Street, Egremont, Cheshire, from whom any information concerning the Association may be obtained.

Representatives on the London Council.—J. A. Davenport, Surveyor and Inspector, Nantwich (rural); Thos. Wallis, Surveyor and Inspector, Wirral (rural).

The Chairman and Secretary are *ex-officio* representatives.

SYLLABUS OF LECTURES, PAPERS, &c., SESSION 1889-90.

1889.

May 11.—Visit to Mr. Councillor Herbert Fletcher's Ladyshore Collieries, near Bolton, and neighbouring Manufactories, where Smoke Abatement Appliances are in operation.

June 8.—Short Papers by the Members:—Mr. Henry Martin, Inspector of Nuisances, Birkenhead Union—and others.

July 13.—Paper: "Pure Air, and some of the methods of preserving it." By Mr. Thos. Procter, Inspector of Nuisances, Dalton-in-Furness.

Aug. 17.—Picnic to Chester.

Sept. 14.—Paper: "Cow-sheds, Dairies, and Milk-shops' Order." By Mr. R. A. Houghton, Chief Inspector of Nuisances, Birkenhead.

Oct. 12.—Paper: "The Chemistry of Sewer Gas." By Mr. G. H. Wilkinson, District Sanitary Inspector, Liverpool.

Nov. 9.—Paper: Subject not fixed. By J. Parry, Esq., M. Inst. C.E., Liverpool.

Dec. 14.—Second Annual Dinner.

1890.

Jan. 11.—Paper: Subject not fixed. By Dr. J. Stopford Taylor, Medical Officer of Health, Liverpool, Vice-President of the Association.

Feb. 8.—Paper: "Plumbers' Work, as applied to the duties of Sanitary Inspectors." By Mr. A. E. Adams, District Sanitary Inspector, Liverpool.

Mar. 8.—Paper: "Notes from the experience of a Sanitary Inspector." By Mr. Jas. Cooper, Superintendent Sanitary Inspector, Liverpool.

Apr. 12.—Annual Meeting.

The Ordinary Monthly Meetings of the Association are held on the second Saturday in each month at 6 P.M., in the Class Room, Free Library, William Brown Street, Liverpool. Monthly meetings of the Council are held in the above room at 5 P.M. previous to the ordinary meetings.

THE METROPOLITAN PUBLIC GARDENS ASSOCIATION.

A MEETING of members was held at 83, Lancaster Gate, on July 3, when the completion and opening of St. Alphege Garden, Greenwich, was announced. It was agreed to place seats by St. Michael's, South Bromley, to lay out St. Bartholomew's disused burial-ground, Smithfield, and St. Clement's ground, Fulham; to offer seats for Knightsbridge Green; to take steps respecting a plot of vacant land in Newington; to use every means for opposing encroachments on Barnes Common, the closing of the Fulham Town Meadows, and building operations upon the Bethnal Green Poor's Land, the disused burial-ground adjoining Whitefield's Tabernacle, and the whole of the site of the Coldbath Fields Prison; to promote the Bill for the restriction of the height of buildings in London, and to endeavour to secure an open space in Hammersmith. It was reported that the Paddington Vestry had consented to allow the Association to plant three trees on the triangle in Bayswater Road; that an offer of seats had been made for Hyde Park Corner; that two large beds, or stands of flowering and foliage plants, had been erected in Trafalgar Square; that Barnsbury Square was open to the public; and that £200 had been sent by the Association to the fund for the acquisition of the North Woolwich Gardens.

LOCAL INTELLIGENCE.

THE CONDITION OF THE SHEFFIELD WATERWORKS.—At a recent meeting of the Waterworks Committee Mr. E. M. Eaton, the manager of the undertaking, stated that having regard to the recent lamentable occurrence in America, and the disquieting rumours which had prevailed elsewhere, he had thought it would be satisfactory to the committee that he should make a careful personal inspection of the embankments of the various storage and service reservoirs belonging to the Corporation, and the works connected therewith. He had pleasure in stating that, with the exception of a few matters of ordinary maintenance quite unconnected with the security of the works, he found the embankments and appurtenances in excellent order and condition.

THE WATER SUPPLY OF KIRKBY AND SKEGBY.—The schemes for the supply of water to Kirkby-in-Ashfield and Skegby, together with Stanton Hill, are now officially completed. The existing supply has long been of an unsatisfactory character, serious illness in portions of Kirkby-in-Ashfield being traced to the water, with the result that the several sanitary authorities arranged with the Sutton-in-Ashfield Local Board for a supply from their well at Rushley. The contract for Kirkby was let to Mr. C. Green, of Rotherham, and that for Skegby to Mr. Tomlinson, of Derby, both of whom have done their work satisfactorily, the pipes being supplied by the Butterley and Stanton Companies. Yesterday, Mr. J. E. Allsop, chairman of the Sutton Water Committee, accompanied by most of the members of the Local Board and Mr. Hodson and Mr. Walker (the engineers), tested the mains. It is anticipated that the houses will be connected almost immediately.

OVER-CROWDING NEAR BELPER.—At the June monthly meeting of the Belper Rural Sanitary Authority, Dr. E. Gaylor, one of the medical officers of health, presented a report regarding a very bad case of over-crowding at Kirk Langley. The house was situate at the Common, and occupied by a man named William Neale, a cripple. A daughter, aged 25 years, was an epileptic. There was another daughter with two children and her husband Altogether there were a dozen persons and two bed-rooms, if one could be called by that name. The whole place wore an aspect of squalor and poverty, and both sexes, of all ages, were mixed together in their sleeping arrangements in any sort of fashion, with no other sort of consideration than their own so-called comfort. The usual order was made for the house to be closed against so many occupants.

THE HEALTH COMMITTEE of the Glasgow Town Council have agreed to increase the salary of Mr. Fyfe, the Sanitary Inspector, from £300 to £500 per annum.

APPOINTMENTS.

MEDICAL OFFICERS OF HEALTH.

BARWISE, Sydney, M.B.Lond., Dipl. Public Health (Cambridge), M.R.C.S., L.S.A., late District Medical Officer of Health for the parish of Birmingham, has been appointed Medical Officer of Health of Blackburn.

BREMNER, Dr., has been appointed conjoint Medical Officer of Health of the parish of Alyth.

BROCKLESBY, Richard, L.R.C.P.Edin., L.M., M.R.C.S., has been re-appointed Medical Officer of Health to the Clee-with-Weelsby Urban Sanitary Authority at a salary of £25 per annum, for one year, ending June 24, 1890.

CLARK, Dr. Arthur, has been re-appointed Medical Officer of Health to the Street Urban Sanitary Authority for one year.

COCKILL, Dr., has been appointed Dr. Paget's deputy for the Kendal District of the Westmoreland combined District during the vacancy.

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HOSEGOOD, Samuel, M.D., has been re-appointed Medical Officer of Health to the Swinton and Pendlebury Urban Sanitary Authority.

JOHNSTON, E. Cocks, M.R.C.S., L.S.A.Eng., has been re-appointed Medical Officer of Health to Leckhampton Urban Sanitary Authority.

MACLAGAN, J. McGrigor, M.D., L.R.C.S.Edin., has been re-appointed Medical Officer of Health to the Hexham and Haltwhistle Rural Districts.

MASSIAH, Dr. B. J., late Resident Medical Officer of Barnes, Convalescent Hospital, Cheadle, &c., has been appointed Medical Officer for the townships of Withington, Burnage, Chorlton-cum-Hardy, and Didsbury, Chorlton Union, and Public Vaccination Officer for Didsbury and Burnage, in place of Dr. Irving, resigned.

MURDOCH, Mr. Andrew, has been appointed Medical Officer of Health to the Rainford Urban Sanitary District of the Prescot Union.

OWEN, John Morgan, L.R.C.P.Lond., M.R.C.S.Eng., has been appointed Medical Officer of Health for the Fishguard District, *vice* William Dean Wathen, L.R.C.P., M.R.C.S., and L.M., deceased.

REDMAYNE, Dr., has been appointed Dr. Paget's deputy for the Ambleside District of the Westmoreland combined district during the vacancy.

RUTHERFORD, John James, M.D.St.And., L.R.C.P., L.M.Edin., has been appointed Medical Officer of Health of Shipley, Yorkshire, *vice* William Henry Ellis, M.R.C.S.Eng., L.S.A., resigned.

WIGHTWICK, F. P., M.B., M.R.C.S., L.R.C.P., D.P.H., appointed Medical Officer of Health, St. Olave District, Southwark, *vice* J. Northcote Vinen, M.D.Aberdeen, L.S.A.Lond., resigned.

WILLIAMSON, A. Maxwell, M.B., C.M., has been appointed Medical Officer of the landward portion of the parish of Alyth.

WILSON, A. F., L.F.P.S.Glasg., has been appointed Medical Officer of Health to Stirling, *vice* Donald McFadyen, M.D. Glasg., C.M., resigned.

POOR-LAW MEDICAL OFFICERS.

ALFORD, Charles Edward, M.R.C.S., L.S.A., has been re-appointed District Medical Officer of Health of Misterton.

ARMSTRONG, Leonard H., B.A.Camb., M.R.C.S.Eng., has been appointed Medical Officer of the Bedale District of the Leyburn Union.

BRENTON, William H., M.R.C.S., L.S.A., has been appointed Medical Officer of the Northern District of Plymouth Incorporation.

BRODRICK, H. Edward, M.D., B.S., M.R.C.S., L.S.A., has been appointed District Medical Officer for Knayton, in the Thirsk Union District, and Medical Officer and Public Vaccinator for the Borrowby District in the Northallerton Union.

BUTTINGHAM, C. E. S., L.F.P.S.Glasg., L.A.H.Dub., has been appointed Medical Officer of Health to the Williton Union (Eastern District, Somerset), *vice* R. Pairman, resigned.

CALCOTT, L. B., M.R.C.S., L.S.A.Eng., has been re-appointed Medical Officer of Oundle Rural and Union District.

CARR, Mr. E. (Newport Pagnell), has been appointed Vaccination Officer, *vice* Mr. Thomas Payne, resigned.

CHAMBERS, Dr., has been appointed Medical Officer for the District of Long Eaton by the Shardlow Board of Guardians.

CHEETHAM, Walter Henry, M.D.Durh., M.B., M.R.C.S.Eng., has been appointed Medical Officer of Health for the Southern Division of the Wharfedale Sanitary Authority, *vice* William Maw Pinder, L.R.C.P.Edin., M.R.C.S.Eng., and L.S.A., deceased.

COOPER, Mr. William F., has been appointed Medical Officer to the 8th District of the Newmarket Union, *vice* Mr. Edward Watson, M.R.C.S., L.S.A., resigned.

CORBET-LYON, Mr., has been re-appointed Medical Officer of Health, for the Scrooby District, Retford Union.

EVANS, Oliver, C.P., has been appointed Medical Officer to the 2nd District of the Kidderminster Union.

FORSYTH, Robert, M.D.Glasg., M.B. and C.M., has been re-appointed Medical Officer of Birstal, Birkenshaw, and Drighlington Union Districts.

HART, Francis J. L., M.B., C.M.Edin., has been appointed Medical Officer of the Wansford District of the Stamford Union.

HIND, Albert, L.R.C.S. and L.M.Edin., L.S.A.Lond., has been re-appointed Medical Officer of South Molton Union District.

HIRST, A., M.D.St.Andrews, F.R.C.P.Edin., has been re-appointed Medical Officer of Prestwich Union District.

HUTCHINSON, A. C., M.D., appointed District Medical Officer to St. Leonard, Shoreditch, *vice* F. C. Roe, L.K.Q.C.P.Ireland, L.R.C.S.Ireland, deceased.

INGLE, A. C., M.B., B.C., M.R.C.S.Eng., has been appointed Medical Officer to the Cambridge Union, *vice* R. N. Ingle, M.D., L.R.C.P., London, resigned.

JONES, David J., M.B., M.S.Edin., has been appointed Medical Officer of the Penderyn District, Merthyr Tydfil Union.

JONES, Dr., has been appointed Medical Officer for the Second District of the Halstead Union, at a salary of £45 per annum.

KOZETLITZ, Mr. Maurice, has been appointed Medical Officer to the Hartfield (No. 3) District of the East Grinstead Union, *vice* Mr. W. Wallis, resigned.

LAWSON, Joseph, M.B., L.R.C.S., L.M.Ireland, has been re-appointed Medical Officer of Hebden Bridge Union and Todmorden Rural Districts.

LIESCHING, Mr., has been appointed by the Tiverton Guardians Medical Officer to the Halberton and Willand Parishes, at a salary of £22 per year for the former and £8 for the latter.

LILLEY, James Harvey, has been appointed Medical Officer for the City District and the Workhouse of the Hereford Union, *vice* Mr. G. B. Hanbury, M.R.C.S., L.S.A., resigned.

LLEWELLIN, Mr. J., has been appointed Medical Officer and Public Vaccinator to the Williton Union (Stogursey District), Somerset, *vice* R. Pairman, M.D., resigned.

LYON, A. C., M.D., C.M., M.B.Aberd., has been re-appointed District Medical Officer, East Retford Union.

MATTHEWS, Mr. Charles T., has been appointed Dr. Saunders' Deputy as Union Medical Officer of Clyst-Lydon, Exeter.

MORRISON, R. S., M.B., C.M.Edin., has been appointed Medical Officer of Cleckheaton, Hunsworth, and Gamersat Districts.

NAPPER, A. A., M.R.C.S., L.S.A., has been re-appointed Medical Officer of the Hambledon Union.

NORRIS, Oliver, Mr., has been appointed Medical Officer to the Weaverthorpe District, Duffield Union, *vice* Mr. John Bell, resigned.

O'FARRELL, Dr., has been appointed Medical Officer for the North District, Yarmouth Union.

PORTER, Dr., has been appointed by the Edmonton Board of Guardians Medical Officer of Health to the newly-formed Western District of Tottenham Parish.

RICHARDSON, W. J., M.B., C.M.Edin., has been appointed Medical Officer to the North Keighley District of the Keighley Union.

ROBINSON, James, M.D.Brussels, L.R.C.P.Edin., M.R.C.S., has been re-appointed Medical Officer of Health to the Turton Union District.

ROGERS, G. P., L.R.C.S.Ireland, and L.R.C.P.Edin., has been appointed Medical Officer to No. 4 or Central Dartford District, Greenwich Union.

RUSHER, James Golby, M.R.C.S.Eng., L.S.A., has been appointed Medical Officer for the Grafton-Flyford and Upton-Snodbury Districts of the Pershore Union.

RUSSELL, James, M.A.Aber., M.B., C.M.Edin., has been appointed Medical Officer of Keighley Union, *vice* J. Wilson, L.R.C.P., L.R.C.S., resigned.

SPENCER, Edward M., M.D.Toronto, L.R.C.P., L.R.C.S.Edin., has been appointed Medical Officer of the Buckland District of the Tavistock Union.

SUGARS, J. C., M.D., M.Ch.Ireland, has been appointed Medical Officer and Public Vaccinator, Dungannon Dispensary District.

SUTCLIFF, J. H., M.B.C.S.Eng., L.S.A., has been appointed Medical Officer and Public Vaccinator of the Horsley District, Guildford Union.

THOMPSON, Isaac, M.B.Edin., has been appointed Assistant Medical Officer, Coventry Union.

THOMPSON, S. M., M.D., Resident Medical Officer of the South Dublin Union, has been appointed a Visiting Physician to the Institution, *vice* Dr. Jennings, resigned.

THYNE, Dr., has been re-appointed Medical Officer for the District of Potter's Bar, Edmonton Union, for one year.

TRAVIS, George L., M.R.C.S., has been appointed Medical Officer of the Weybunbury District of the Nantwich Union.

WEARING, Richard, M.D., M.B., C.M.Edin., has been appointed Medical Officer of the Childwall District, West Derby Union.

WEBB, John Staines, M.R.C.S.Eng., L.S.A., has been re-appointed District Medical Officer of Marshwood.

WHEELER, Humphry J., M.B., M.R.C.S., L.R.C.P., has been appointed Medical Officer and Public Vaccinator to the Second District of the Wycombe Union, *vice* F. H. Turner, M.R.C.S., L.S.A., resigned; also Surgeon to the High Wycombe Cottage Hospital and Medical Officer to the High Wycombe Provident Dispensary, *vice* F. H. Turner, resigned.

WOODWARD, Mr. Martin, has been re-appointed Medical Officer of Health for the Eckington District of the Pershore Union for the period of three years.

PUBLIC ANALYSTS.

STEVENSON, Thomas, M.D.Lond., F.R.C.P., M.R.C.S.Eng., has been re-appointed Public Analyst to the St. Olave's Union.

STEVENSON, Thomas, M.D.Lond., F.R.C.P., M.R.C.S.Eng., has been appointed Public Analyst to the St. Olave's District Board of Works.

SURVEYORS.

GORDON, Mr. J., Engineer and Surveyor to the Borough of Leicester, has been appointed Chief Engineer to the London County Council, at a salary of £1,500 a year.

MARSTON, Mr. C. F., of Walsall, has been appointed Borough Surveyor to the Sutton Coldfield Urban Sanitary Authority, to fill the vacancy caused by the resignation of Mr. John Fletcher, who has accepted an appointment at Durban, Natal.

WEBSTER, Mr. John Lawton, the Borough Surveyor to the Urban Sanitary Authority of Multon, Yorks, has been appointed Surveyor of the East Riding.

Inspectors of Nuisances.

Evans, Mr. Ebenezer, has been appointed Inspector of Nuisances to the Rural Sanitary Authority of Ruthin Union, *vice* Mr. Henry Davies.

Evans, Mr. John Evan, has been re-appointed Inspector of Nuisances to the St. Olaves' Union.

Harradine, Stephen, has been re-appointed Sanitary Inspector to the Hendon Rural Sanitary Authority, at a salary of about £125 per annum.

Rawlins, Mr. Alfred, has been appointed Inspector of Nuisances to the Rural Sanitary District of the Westbourne Union, *vice* Mr. Joseph Trudgett.

RESIGNATIONS.

Arundell, Shirley Woolmer, M.R.C.S.Eng., and L.S.A., Medical Officer of the North Welney District of the Downham Union.

Dale, Henry Ridley, L.R.C.P.Edin., L.M., M.R.C.S., and L.S.A., Medical Officer of the Sunderland District of the Sunderland Union.

Kellett, Robert Guy, L.K.Q.C.P., L.R.C.S.I., Medical Officer of the 2nd Division of the 1st District of the Halstead Union.

Lee, Mr. J., Clerk to the Guardians of the Weardale Union.

Luton, Mr. T., Medical Officer to the St. Mary District of the Taunton Union.

Mould, Mr. James, Sanitary Inspector to the Marlborough Urban Sanitary Authority.

Paget, Charles Edward, M.R.C.S.Eng., L.R.C.P.Lond., Medical Officer for the Westmoreland combined District.

Pearce, Edward, M.R.C.S.Eng., L.S.A., Medical Officer of Health to the Camelford Union Rural Sanitary District.

Read, Mr. Charles George, M.R.C.S., L.S.A., Medical Officer of the Stradbroke District, Hoxne Union.

Tweedy, Charles, M.R.C.S.Eng., Medical Officer of the Knayton District of Thirsk Union.

Walters, Mr. T. G., Inspector of Nuisances to the Paignton Urban Sanitary District of the Totnes Union.

Wilson, Mr. Francis, Medical Officer of the North Keighley District and Workhouse of the Keighley Union.

VACANCIES.

Medical Officer of Health.—The New Romney Urban Sanitary Authority will, on August 12, appoint a Medical Officer of Health to the Urban Sanitary District, at the annual salary of £10. Applications by August 10, to Henry Stringer, Esq., Clerk, New Romney.

Medical Officer required by the Glentres Union for the Carrick Dispensary. Salary £115 per annum and fees. Applications by July 19, to Mr. Arthur Brooke, Hon. Sec., Whitehouse, Killybegs, Co. Donegal.

Surveyor.—The Cleator Moor Local Board require the services of a Surveyor for their district. Candidates must have a knowledge of sewage disposal and chemical treatment of the same, and otherwise competent to fulfil the duties of the office. Applications, with testimonials, to the Clerk to the Board, Henry Bothery, Esq.

Surveyor.—The Town Council of the Borough of Stratford-upon-Avon will, at a meeting to be held on July 16, proceed to the election of a Surveyor for that Borough. Salary £200 per annum.

Surveyor.—The Acton Local Board are advertising for a Surveyor. Candidates to devote the whole of their time to the duties of the office, and not to be allowed to carry on any private practice. Age not to exceed 45 years. Salary £350 per annum. Applications, with copies of testimonials, to be sent to the Chairman, and endorsed "Application for Surveyorship," by July 16.

Assistant Borough Surveyor.—The Corporation of Walsall require a person to fill the above post; must be active and intelligent, and had good experience in similar capacity. He must be competent to take levels, make surveys, and prepare plans, estimates, and specifications. Salary £120 per annum, with an increase of £10 per annum, until it reaches £150, for meritorious service. Applications, stating age and experience, with not more than three testimonials, and marked outside "Assistant Surveyor," to be sent to Mr. J. P. Cooper, Town Clerk, Walsall, by July 20.

Inspector of Nuisances, &c.—The St. Saviour's Board of Works are advertising for applicants for the above post. Candidates to be not more than 40 years of age, and hold a certificate of the Sanitary Institute, or of the City and Guilds of London Institute for Plumbing and Sanitary Work. Salary £110 per annum, with dwelling-house, coal and gas. W. H. Atkins, Esq., Clerk.

DEATHS.

Beacroft, Henry, Clerk to the Guardians of the Droitwich Union.

Ball, Benoni Timothy, L.S.A., District Medical Officer of St. Austell Union, Cornwall.

Pinder, Wm. Maw, L.R.C.P.Edin., M.R.C.S.Eng., and L.S.A., Medical Officer of Health, South Division, Wharfedale Union, Yorkshire.

Roe, F. C., L.K.Q.C.P.Ireland, L.R.C.S.Ireland, District Medical Officer to St. Leonard, Shoreditch.

Todd, W. J., L.R.C.P., M.R.C.S., L.S.A.North Petherton, Medical Officer and Public Vaccinator, 9th District, Bridgwater Union.

Wathen, William Dean, M.R.C.S., L.S.A., Medical Officer of Health, Fishguard, Union Medical Officer.

CONTRACTS.

Shirley and Freemantle Local Board.

The Local Board for the District of Shirley and Freemantle are desirous to receive Tenders for laying about 6 miles of Pipe Sewers, with the necessary manholes, gullies, &c., constructing Three Reservoirs, lowering existing Outfalls, and other work incidental thereto.

Specifications, &c., may be obtained on application to Mr. H. J. Weston, Assoc.I.C.E., Surveyor to the Local Board, 178, Shirley Road, Shirley, Southampton.

Tenders (endorsed "Tender for Freemantle Sewage") to be delivered to the Offices of the Board not later than Monday, July 29.

M. Harte, Clerk.

Poplar Union.

The Guardians of Poplar Union are prepared to receive Tenders for a new system of Drainage at the Workhouse, High Street, Poplar, E.; also for Works to Soil Pipes, Rain-water Pipes, &c.

Drawings and Specifications may be seen at the offices of Messrs. Clarkson, Surveyors, 146, High Street, Poplar, E.

Tenders may be obtained of Messrs. Clarkson, and must be delivered not later than Wednesday, July 24, at the Union Workhouse, High Street, Poplar.

G. Herbert Lough, Clerk to the Guardians.

Tottenham Local Board of Health.—To Well Sinkers.

The Tottenham Local Board of Health invite Tenders for the formation of a well and 24-inch boring in the chalk, at their Longwater Pumping Station, Tottenham.

Specifications, &c., may be seen, and form of Tender obtained of Mr. J. E. Worth, Engineer to the Board, at the offices, High Road, Tottenham.

Tenders to be delivered to me not later than Tuesday, July 16.

Edward Crowne, Clerk to the Board.

Lambeth Vestry.

The Vestry of the Parish of Lambeth hereby give notice that they are desirous of contracting for the construction of 1,250 ft. line of 4 ft. 6 in. by 3 ft. Brick Sewer in Water Lane, Brixton.

Drawings, &c., may be obtained on application to Mr. H. McIntoch, Surveyor, at the Vestry Hall, Kennington Green, between 12 and 2.

Tenders, marked "Tender for Sewer," must be delivered at the Vestry Hall not later than Thursday, July 18.

H. J. Smith, Clerk to the Vestry.

City of Belfast.—Main Drainage Works (Contract No. 2).

The Corporation of Belfast are desirous of receiving Tenders for the construction of a High Level Sewer and other works connected thereto.

Drawings and Specifications may be seen at the office of the City Surveyor, Mr. J. C. Bretland, M.I.C.E., Town Hall, Belfast, and copies thereof, and of the bill of quantities with form of Tender, may be obtained on payment of 5 guineas, returnable if a *bond fide* Tender be furnished in the manner prescribed by the Specification, and on the Drawings and Specification being returned.

Tenders (endorsed "Main Drainage Works," Contract No. 2) addressed to me, must be delivered at my office on or before July 23.

Samuel Black, Town Clerk.

The Vestry of the Parish of Paddington are prepared to receive Tenders for erecting and completing a Public Urinal and Conveniences Underground, at the south-east corner of Paddington Green, together with works incidental thereto.

Tenders to be directed "To the Vestry," and left at the Vestry Hall, Harrow Road, before 3 P.M. on Monday, July 15.

Specifications, &c., may be seen, and further particulars obtained from the Surveyor, at the Vestry Hall.

Frank Dethridge, Vestry Clerk.

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ORIGINAL PAPERS.

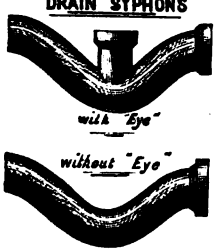
THE INSPECTION AND CLEANSING OF DOMESTIC DRAINAGE.

By W. D. Scott Moncrieff.

The arrangements which were made for the drainage of houses until the close of the first half of the present century were intended only to provide an outlet for the sewage, without taking into account the dangers to health which arise from the intrusion of noxious gases which are given off in its passage to the sewer or cesspit. The earliest appliance for preventing the free passage of gases backwards through the drains was a "dipstone"—which is a primitive form of trap." As a rule these were fixed with a vertical tongue projecting downwards from the upper part or cover of a built box to within a few inches of the bottom, the "seal" being provided for by the inlet and outlet having a higher level by a few inches than the lower edge of the tongue.

The idea of disconnecting the further portions of the drain and sewers from the house section came later on, and in the case of the built box and dipstone would have been embodied by leaving the half of the built box on the house side of the tongue open to the outer air. Whether or not this was ever done in practice I am not in a position to say.

Fig I.
DRAIN SYPHONS



In course of time the dipstone was discarded in favour of earthenware traps, which did not make any provision for ventilation or disconnection. A common form of these early appliances is shown in Fig. I.

It must be nearly twenty years ago since Dr. Fergus, of Glasgow, fitted up in his own garden an arrangement by which the flow of his house drain could be seen through a long narrow open grating. At that time the idea of disconnection had already occurred to me independently, and the interest I took in the subject led me to inspect the arrangement which Dr. Fergus had fitted up, and which is roughly illustrated in Fig. II.

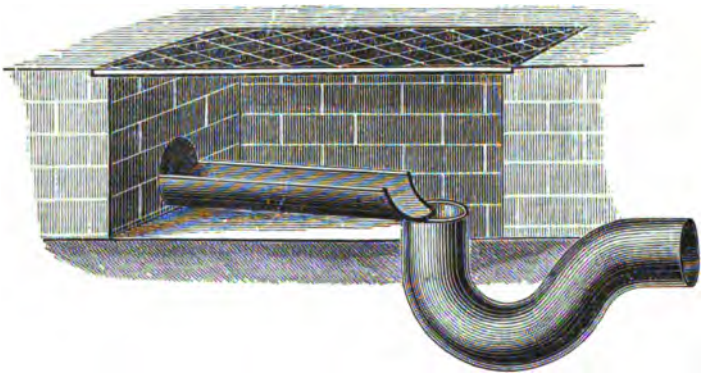


Fig. II.

It will be noticed that this arrangement embodies all the conditions of a modern manhole with provision for cleansing and inspection, also for disconnection and ventilation, but it is somewhat undeveloped in detail. The nearest approach to this device that I know of in a self-contained form is Potts' Edinburgh trap, which is shown in Fig. III.

The half channel and sides, also the inlet and trap, are made in one piece of earthenware. This apparatus so far holds the field that in cases where it has been applied to houses in open situations in the country, I have seen no sufficient reasons to condemn it, and this opinion would be supported by many sanitary experts. Following closely upon this arrangement we have the plan adopted by Mr. Norman Shaw (Fig. IV.), which I believe was an original invention, as far as he knew to the contrary, and of which for many years he himself has been an able and enthusiastic exponent. It provides for disconnection from the house drain, but not for the inspection of the drain itself, unless supplemented by a manhole or trap access near the sewer, but it precludes the through ventilation of the drains, the branches of which have blind ends terminating in traps, and in some cases it involves an absence of through ventilation to the drain itself.

I have mentioned Potts' Edinburgh trap as being closely identified with the original apparatus fixed by Dr. Fergus, but I do not think it preceded Mr. Buchan's design for a combined disconnecting and ventilating trap in point of time. The idea of disconnecting the house drain having taken a practical and definite form, Mr. Buchan in 1875 brought out an arrangement by which the earthenware trap itself admitted of an ingress for the sewage by being connected to the drain by a spigot and faucet joint horizontally, and for an inspection and air inlet pipe by a similar contrivance vertically. The advantage of this arrangement (Fig. V.) as compared with the narrow oblong chamber of Dr. Fergus and the earthenware Potts' channel and trap is, that however deep the drain may be, the air inlet and inspection shaft can be carried up by simple earthenware drain-pipes fitted one on the top of the other to any height or depth that may be necessary. About eight years ago these traps, fitted with vertical shafts of earthenware pipes, were almost universally recommended by sanitary experts in London, and they still hold the field to the exclusion of other appliances in many parts of the country. At first the custom was to put an open grating as an air inlet on the top of the highest vertical pipe of the air shaft on the ground level, and this again followed closely upon the lines of Dr. Fergus' arrangement. Frequent complaints were made of offensive smells from these openings, more especially when there was a certain gaseous pressure produced in the drain between the outlet trap and the point of discharge of large quantities of liquid, as must necessarily be the case while a house is in occupation.* This led to the hermetic

* See Mr. Buchan's Chapter upon Drains, in which he repudiates this objection.

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closure of the top of the earthenware inspection shaft, and the introduction of a supplementary air pipe (Fig. VI.), which was carried a few feet above the ground level so as to remove the smells to a point higher than the heads of persons likely to notice it. This arrangement in cases of drains of deposit, or of large diameters or insufficient fall, is certainly a defective one. Several designs followed upon Mr. Buchan's, but all of them are, more or less, changes rung upon the original pattern, embodying small though often important details.

The system just described is not one that admits of any marked alternatives, and I now pass on to an account of another modification of Dr. Fergus's apparatus, which seems to have gone on concurrently with the improvements of Mr. Buchan, more especially in London. I refer to the enlargement of the oblong shaft into what is known as a manhole (Fig. VII.), instead of confining it to the dimensions of an ordinary earthenware pipe. This system was, no doubt, taken over from the already well-known and largely used plan of access to sewers adopted by Sir Robert Rawlinson in his own practice, and fully developed in that splendid contribution to practical sanitation, his "Recommendations to Engineers,"

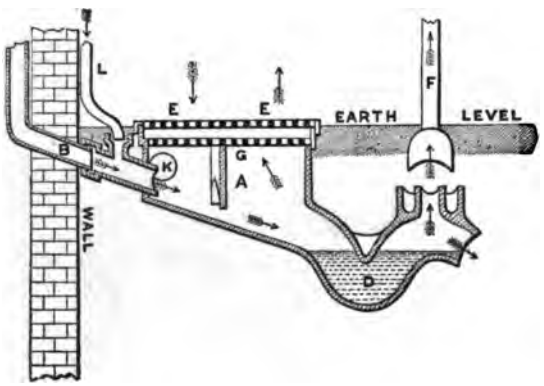

Fig. III.

which ought to be familiar to everyone interested in the subject.

One of the first effects of the introduction of the large manhole to house drainage was the modification of Buchan's trap, which still remains as regards its essential features, but without the faucet for the reception of the vertical air shaft, which is of course unnecessary when the manhole itself serves the purpose. These modifications in some cases, as in Mr. Roger Field's trap, take the form not only of an absence of the faucet for the vertical air shaft, but a provision for fixing a half-channel pipe into a horizontal semicircular faucet. This and many others are no doubt familiar to you.

Brick-built manholes, with half-channel pipes discharging into a disconnecting gully and provided with an air inlet pipe, are still in vogue, the arrangement recommended to its members by the London Sanitary Protection Association as a typical illustration of the system being illustrated in Fig. VII.

Before going on to a criticism of these arrangements, I shall briefly refer to what, so far as I know, is the most advanced sanitary practice with regard to these matters in America, first remarking that what I have said upon the historical aspect of the practice in this country is written under correction, as I do not know of any authoritative information which can set the matter beyond dispute.*

In the United States, where great improvements have been made in house sanitation, the idea of disconnection and ventilation has been carried out, but in a different way. The system in this country, from the first practical installation until now, has always, more or less, embodied conditions which included

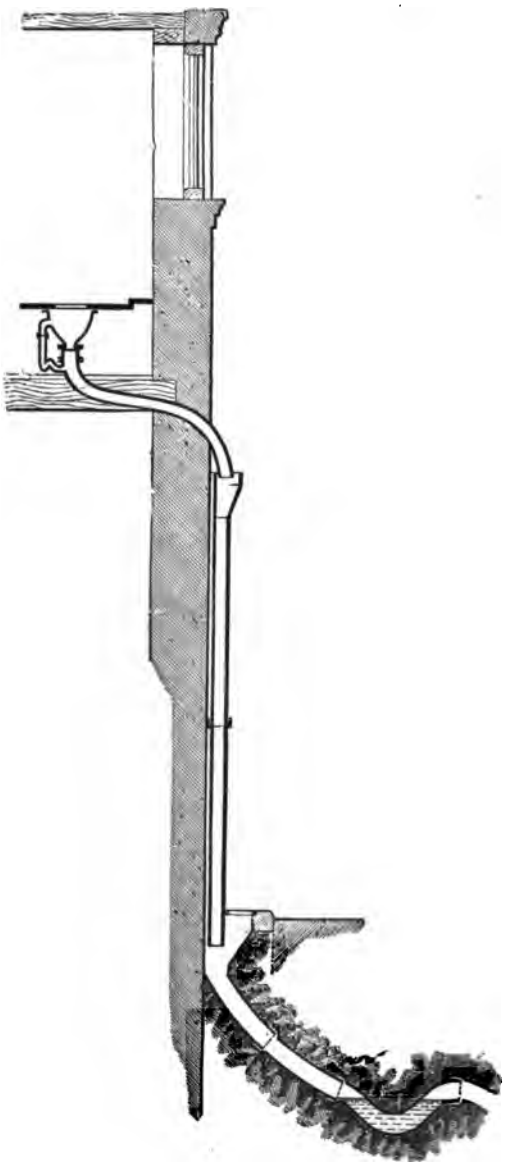

Fig. IV.

inspection and cleansing, first in the open grating of Dr. Fergus, as embodied in "The Edinburgh Trap," and afterwards in Buchan's ventilating shaft and the full-sized manhole. In America the practice appears

* Some negative evidence is available to show that the brick-built manhole for house drainage, as now generally employed, is comparatively a new improvement, as it has not been described in standard text-books until quite recently. I refer to its absence in Mr. Baldwin Latham's *Sanitary Engineering* (1878) and Mr. Buchan's *Text-Book, Weale's Series* (1880).

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more to have been in the direction of trapping arrangements similar to those introduced in this country by Mr. Banner, in which access is provided for by means of a cover or screwed plug on the side of the trap, the ventilation being conveyed to the house side of the drain from the full height of the building above it. Instead of providing for the accessibility of branch drains by bringing them into a focus by means of half-channel pipes radiating from the house drain in an inspection chamber, they provide each vertical pipe with a trap, to which access is obtained by means of a screwed plug on the side, or by a removable cap, as shown in Figs. VIII. and IX. In most cases I believe ventilation above the trap is provided for by means of a separate inlet ventilating pipe, which must make the system as a whole, especially in large establishments, unnecessarily elaborate. In fact the arrangements, so far as I can understand them, attain the same object in a more roundabout and less satisfactory manner than by through ventilation taking place past the inspection chambers and up the soil pipes. One great advantage of the American system is, that they do not allow themselves to be beguiled into any risks with regard to the stability of the materials which they employ, or the thoroughly reliable and sound methods of putting them together. Strong cast-iron pipes are now almost universally employed for house drainage in that country; and in this respect, although myself I have used nothing else in my own practice for several years, they are far ahead of the general methods adopted in the United Kingdom. Some idea may be formed of the lengths to which they have gone in regard to testing the efficiency of their sanitary arrangements by what has been told me quite recently by a correspondent in New York. He writes:—"One large building upon which I was working this autumn was tested at one operation by hydraulic pressure for soil, waste rain conductor and drains in basement in the presence of Mr. Gerloch, of New York, the gauge indicating 32 lbs. to the square inch."

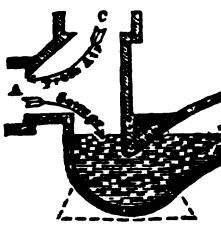

Fig. V.

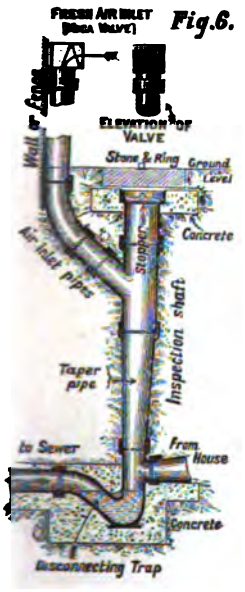

Fig. 6.

For my own part, as an engineer, I can only say that I consider the sense of security which can be guaranteed to a householder under the practice indicated by such a test is an ample return for the comparatively small additional expense incurred, and I much regret that in this country certain gentlemen who have considerable authority on sanitary matters, but who are neither engineers nor architects, should have gone out of their way to retard the progress of house sanitation by speaking in public upon matters which they necessarily, by reason of their training and occupation, know very little about.

It will be strictly within the limits of my subject if I now go on to offer a few criticisms upon the ordinary methods of providing means for inspection and cleansing house drains by brick-built chambers or manholes. In the first place, I would point out that they are not only incapable of standing anything approaching to the severity of the test applied in New York which I have just referred to, but that they are constructively unsuited for the application of the water test, even in the modified degree which is now becoming universally adopted. I will concede the point as regards the drains themselves and the methods of jointing them, because this does not properly come under the special subject I am dealing with, but taking the brick manhole itself, I cannot imagine a more unsuitable appliance for being deliberately tested under water pressure. At the

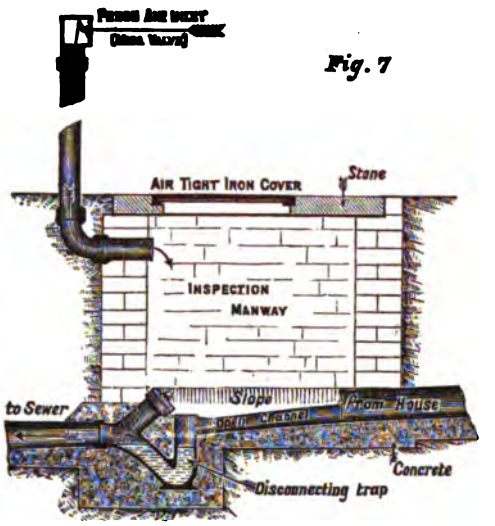

Fig. 7

Fig. VIII.

Fig. IX.

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bottom it is dependent upon a layer of concrete rendered in cement, and at the sides it is constructed of bricks pierced at several points by intruding pipes which have only the surface contact of cement to be depended upon for their capacity to resist leakage. The whole structure is strictly dependent upon the skill and conscience of an individual workman, who works in a constrained and awkward position, and when completed it is subject to the risk of settlement and to the effects of time upon what, in many cases, must prove to be indifferent materials. The arrangement appears to me, in the light of the tests which are now being deliberately applied to it, to be self-condemned, and I do not think that the gift of prophecy is required to predict that it will, sooner or later, be abandoned for methods more like those of our cousins in America.

But I not only take exception to the methods now generally adopted for the construction of domestic manholes in this country, but also to the disadvantages arising from them as at present arranged. (1) With regard to accumulations of foul air which are altogether unnecessary; and (2) their effect in retarding the current of fresh air through the drains. The first point requires no explanation, and the objection is, of course, intensified in cases where manholes must necessarily be arranged inside a house; but the second is a more serious objection, because a retardation of the air current, due to loss from friction and regurgitation in a large manhole, may mean as much as 50 per cent. upon the oxidising effects, which it is the whole object of the system to secure, in the interior of the drains and soil pipes.

It has long appeared to me that what is wanted is a system by which the most perfect security may be obtained, as in the case of the house in New York which I have spoken of on the one hand, together with a more simple and effective method than the one adopted in America for ventilation and inspection. A combination in fact of the best of the practice in both countries.

I must now ask your forbearance while I speak of something of what I have been doing myself, although I wish this part of the subject had fallen into hands less prejudiced than my own. The first idea of obviating the effects of the intervention of manholes so as to save a loss of current of air, was forced upon me at the extensive sanitary works which I carried out at the Foundling Hospital some years ago. In that case I utilized existing sewers as subways in which I laid a system of cast-iron drainage, as has since been done at the Houses of Parliament. At the angles of these sewers the manhole entered the archways from the ground level, and I was confronted with the alternative difficulty either of completing the manhole walls to the bottom of the subways, which would have obstructed them completely, or allowing the half-channel right-angled pipes to remain open, leaving the drains to be freely ventilated into the subways. The alternative of dividing the drainage into sections separately, by means of disconnecting traps and air inlets, was not open to me, because the smallness of the fall required that there should be only one trap for the whole system if possible.

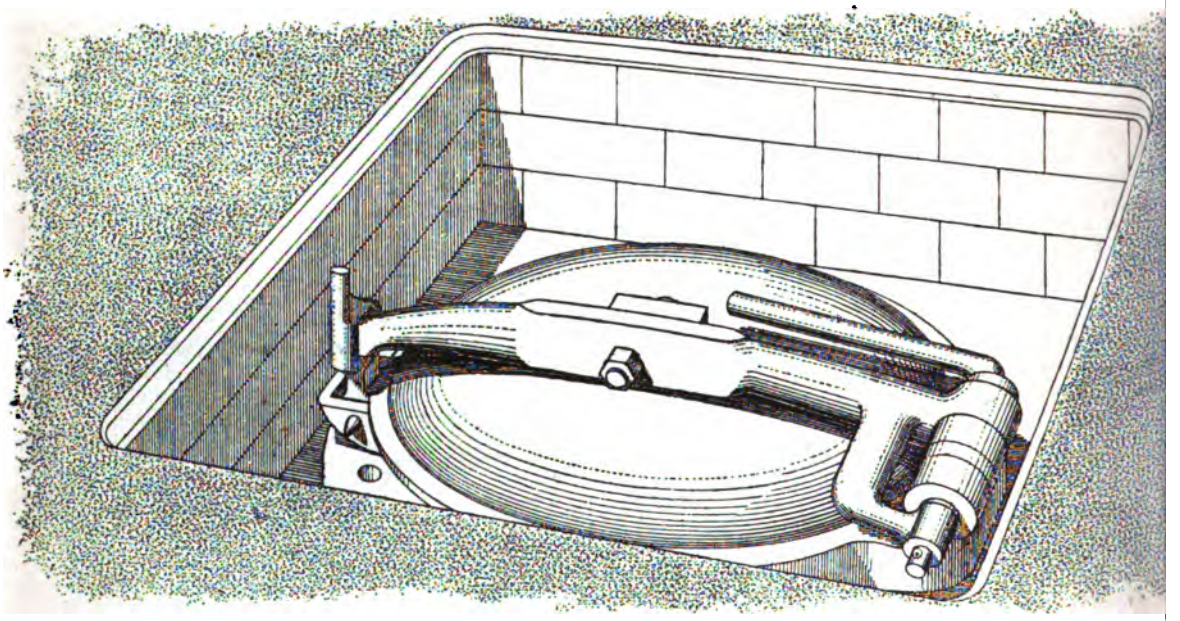

Fig. X.

In these circumstances, it occurred to me that the manholes should be brought up only a few inches above the level of the drains, and provided with air-tight covers. I had long been in search of a thoroughly reliable cover, and had previously used what I did in the present case, a modification of a gas retort lid, in which perfect contact of the closed surfaces is obtained by a metal face to face joint. This arrangement is shown in Fig. X.

Some years before the time I am now speaking of, I had considered the question of making the materials for the construction of house drains homogeneous, and had introduced a cast-iron floor for the inspection chamber. The first form I used was of a sort of hopper shape, provided with faucets for the jointing of the cast-iron drain pipes, and this I found to work very well in practice. (See Fig. XI.) The more

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complete arrangement which I am about to describe was suggested by the manholes in the subways of the Foundling Hospital. It was only a short step from the low manhole, provided with an efficient air-tight cover and the cast-iron hopper floor, to the plan of

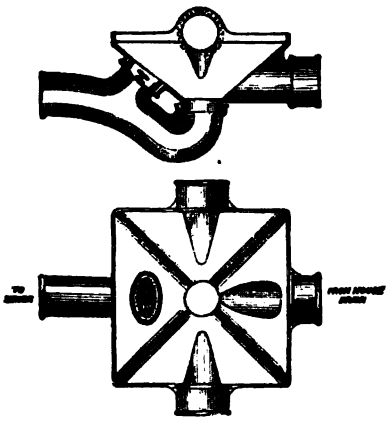

FIG. XI.

carrying the drainage through cast-iron half-channel pipes, cast in the same piece with a shallow chamber in which the sides were provided with flanges to take a plate upon which the cover itself could be secured. This I accordingly did, and several houses in London were provided for in this way with the most satisfactory results.

(*To be continued.*)

ON THE EFFECT OF TOWN LIFE ON THE GENERAL HEALTH, WITH ESPECIAL REFERENCE TO LONDON.

By J. P. WILLIAMS-FREEMAN, M.D., Lic. San. Sci., Durham.

THE increasing tendency of the population to collect together in large towns which the demands and opportunities of modern civilization are bringing about, make it of the utmost importance that we should try to understand how far the health of the individual is likely to be influenced by the altered conditions under which he may be called upon to live. To do this we must appeal both to theoretical considerations and to practical experience; and, while giving all due preference to the latter when it can be fairly stated, we cannot afford to ignore the former, for finding ourselves unable to answer the question, "Is such and such a condition healthy?" we often have to fall back on another, "Is it likely to be?"

The enormously rapid changes that man has been able to effect in his relations with the physical world have given him a confidence in his own resources in his dealings with nature, a familiarity which, if it has not bred actual contempt, has at least led him to estimate at too low a figure the forces which she brings to bear against him. Man, like every other living being, must be constantly on the defensive against nature. Even the common saying, that if there were no departure from natural conditions, if the laws of nature were not broken by man, there would be no sickness and he would be free from disease, will not bear investigation; if one could gain a perfect knowledge of the laws of nature, and unlimited means of suiting man to her circumstances, such a statement might no doubt be true; but since man is not and never will be either omniscient or omnipotent, he will always have to remain more or less subject to the ills that flesh is heir to. The lives of wild animals and plants and of savage races of man are not terminated solely by violence or old age; wolves succumb to rabies, salmon are decimated by disease, and no race of man is sufficiently at peace with nature to escape altogether from malaria or rheumatism.

The survival of the fittest.

On the contrary, it is by the ceaseless elimination of those individuals least able to withstand the attacks of nature that the evolution of man in his present healthful condition has taken place; the "vis medicatrix naturæ," which he now possesses, he owes to the development of qualities for resisting disease by the relentless killing off of the weaker members of the race by the baneful forces of nature. Nature, who is so often poetically spoken of as a kind mother fostering her children, may with equal or greater justice be described as a grim and hostile combination of microbes, parasites, and miasms, of fogs, east winds, and extremes of temperature, who has destroyed infinitely more species of animals and plants than have survived her attacks, and who is still waging a never-ending warfare not only against man but against all other existing forms of life.

Man finds himself the survival of countless generations of predecessors, who have established, as it were, a *modus vivendi* with nature by unconsciously and gradually modifying their organisms to suit her more common conditions. If he maintains unaltered this arrangement of his individual organism, and if nature on her part keeps to her usual conditions, he goes through life comparatively unharmed; but if he allows the position to change either on his side or on hers—above all, if he deliberately alters the natural conditions that surround him as regards temperature, air, water, and food—she is not slow to attack him and to pursue the advantage to the end.

Now, too, he is getting more knowledge of her modes of working, and of how to resist her onslaughts when she attacks him by these common channels; in other words, he is learning, to some extent, how to prevent disease, and even in a few cases to cure it.

The battle of life against nature.

What, then, does theory teach us to be the strongest position we can take up in the battle of life against nature? Clearly that in which he retains as fully as possible the personal physical conditions and natural surroundings of his primitive ancestors, while he avails himself of the additional resources of civilization and education for resisting starvation and disease, and to protect himself against climatic extremes.

He should in fact pass nearly all the hours of daylight in the open air, exposed to the common variations of climate, and in nearly constant exercise of a varying character; his food should be largely vegetable, and not too plentiful: his drink should be water, and that pure; his clothes should guard him from extremes of heat and cold, and his dwelling should add a protection from wet without keeping fresh air out, or foul air in.

It is not, of course, pretended that fulfilment in all completeness of these Arcadian sanitary conditions is absolutely necessary for the preservation of life or even of health. The race is, no doubt, slowly adapting itself to more complex conditions, but they are the sanitary ideal, the safest position to take up against the attacks of disease, and any permanent departure

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from it will, and does surely, bring about an enfeebled vitality and a state of second-rate health in the individual, and a marked deterioration in the physical vigour and disease-resisting qualities of his descendants.

The ease, indeed, with which the adult individual adjusts himself to new surroundings is constantly seen as regards climate and other conditions; and no doubt to a certain extent the type is altering, and the race also is gradually conforming to the new environment of modern life.

Adaptability to environment, however, is not to be attained in nearly the same extent by infants. Representing as they do an earlier stage of man's existence, artificial conditions are far more hurtful to them. A very large proportion of town-born infants —nearly 30 per cent. in central London—drop out in the first five years of life; and those that do survive are profoundly modified and altered by their unnatural surroundings.

The difference of type between the countryman and the townsman is to be noticed everywhere. The country-bred man is bigger, heavier, slower, more plethoric in temperament, and requiring far more physical exercise to keep him in health. The townsman is of a smaller and more "wiry" physique; quicker in thought and action, of a more nervous temperament, and able to stand a sedentary life with comparative comfort. So far it may be said the modern development is an improvement on the more ancient type; but it would seem, as so often happens with artificially bred types of animals, that it is extremely hard to perpetuate. The child of the townsman is an exaggeration of himself, excitable and painfully precocious in its childhood; neurotic, dyspeptic, pale, and undersized in its adult state if it ever reach it. The females, too, although possibly prolific, are not good mothers, sometimes giving a large quantity of feebly nourishing milk, sometimes producing none; moreover, the animal love of their young seems not to be so highly developed in them, and they are inclined to be careless of their offspring. If it be not crossed with fresh blood this town type, in the third and fourth generations, becomes more and more exaggerated, and, as will be seen later on, it has been maintained with considerable show of probability that a pure Londoner of the fourth generation is not capable of existing.

Difference of type between the countryman and the townsman.

The town type in fact does not seem able to produce descendants capable of existing in the same surroundings from generation to generation.

The altered hygienic conditions of town life, aided by the many social evils which are almost necessarily associated with it, by raising to so high a point the infant mortality, by reducing more and more the inherited vigour of each generation, and by exposing each feeble survivor to the hardships of unsuccessful competition, seems more than able to overcome both the inherent hardiness of the individual and the natural fecundity of the race.

There is a limit to the adaptability both of the individual and the race, and it would seem that in London at all events the limit as regards the race has been reached.

Now, if these theoretical considerations are of any value, it is obvious that the health of dwellers in towns, where the ideal conditions are utterly unattainable, ought to be markedly below that of inhabitants of country districts, where an approximation to these conditions is very generally to be obtained, and is, in fact, enjoyed by most of the inhabitants of rural England. And we shall see later on that, when closely examined, a very much greater difference does exist between the healthiness of town and country than is, I think, generally appreciated even by those who take an interest in vital statistics. I propose first to take in greater detail the different conditions of life which exists in towns and country, and to attempt an estimate of their relative advantages and disadvantages.

The health of dwellers in towns.

It may be well to point out at first that in all the resources and appliances of civilization for the preservation of health, such as clothing and housing, the townsman has, as a rule, the advantage of the countryman; while, as regards the treatment of the actual forms of disease, the ease and cheapness with which medical advice can be obtained by all classes of the population, no doubt cuts short many an illness, which, if neglected, would end either in death or in a permanent condition of disablement. Moreover, every discovery of science is available for use in treatment, when a disease has declared itself; and were it not for the unnatural condition in which the individual is placed, these advantages would undoubtedly tell largely in the townsman's favour.

To take now the personal physical condition of an individual living in a large town, one cannot point out a single particular in which he has the advantage of a dweller in the country. Perhaps the greatest disadvantage that he labours under is the difficulty of getting sufficient exercise in the open air; amounting to an impossibility in the great majority of town occupations, and tending, perhaps more than anything else, to the production of phthisis, diseases of the digestive system, the gouty diathesis, and a general lowering of vital tone.

It is difficult to separate the two proverbially associated prophylactics, "fresh air and exercise"; but it will be noted that one, or both of them, is absent from the lives of a large majority of townspeople. For example, to take from the census of 1881 the number of persons engaged in the half-dozen largest occupations in London. The figures are as follows:—

1.	In-door domestic servant - - -	258,709
2.	General labourer - - - -	78,115
3.	Milliner, &c. &c. - - - -	71,837
4.	Commercial clerk - - -	60,605
5.	Tailor - - - - - -	41,221
6.	Carpenter - - - - -	38,143

So that, out of these 548,000 odd persons, about four-fifths lead a wholly in-door life, and of these two-fifths, or 173,000 (nearly a third of the whole number), follow purely sedentary occupations.

Of the effect of the want of fresh air in London I shall speak later on, and it is not easy to show by mortality statistics the separate effect of the want of exercise. The cab and omnibus men and the carters, &c., it is true, follow what may be called a sedentary open-air occupation; but it must be remembered, as the Registrar-General points out in the supplement to his 45th annual report, that we have here, in the cabmen especially, occupations which often form a refuge for men who have fallen from higher occupations by consequence of bad health or evil ways, so that their comparative mortality may be expected to be high, independently of the influence of their occupation. The method adopted by the Registrar-General for comparing the healthiness of different occupations is as follows:—The death-rate in all England and the age distribution of the male popula-

Want of fresh air and exercise.

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tion is such that 1,000 deaths occur annually amongst every 64,641 males between 25 and 65, which may be taken as the working age of a man. Knowing, then, the number of males of these ages engaged in each occupation at the time of the census of 1881, and the deaths in these occupations which occur annually, the ratio of these deaths to 64,641 males engaged will give a "comparative mortality figure" for comparison with 1,000, which is the figure for all English males.

This comparative mortality figure is for cabmen, &c., 1,482, and for carters, &c., 1,275, in other words, that, whereas out of 64,641 males of the working age in England 1,000 die per annum, for the same number of cabmen and carters 1,482 and 1,275 die respectively every year. The excess in the cabmen class is ascertained to be chiefly due to alcoholism, liver disease, diseases of urinary organs, phthisis, and gout, not unlikely causes of death amongst a class in whom drink, want of exercise, and exposure to all sorts of weather, are not infrequently combined.

The ill effects of town life on the nervous system are acknowledged on all hands, and are felt by everyone who has had any experience of cities. Vague and ill-defined though their symptoms are, the very variety of the terms used in discussing their high pressure, nervous exhaustion, neurasthenia, high tension, &c., show how generally these ill effects are experienced. The perpetual movement of objects before the eyes, the ceaseless noises both by day and night, the frequent jarring motion of vehicles, which many classes of people have to undergo, act as physical irritants to the nervous system, while the restless excitement of the higher centres of the brain by overcrowded, ever recurring, stimuli, complete a condition of abnormal nervous irritation, which sooner or later must result in a serious loss of health. The first effect of the bustle of town life on the nervous system is a sensation of unnatural exaltation and excitement of all the faculties amounting sometimes to an unpleasant irritation. This is not unfrequently followed by a lull more or less complete, as the system adapts itself, often very completely, to the new condition of things, and this lull may last for years; but, sooner or later, come the signs of nervous exhaustion, restlessness, nervousness, insomnia, a craving for more excitement which never satisfies the mind, with loss of concentration, of judgment, of sense of proportion, and of all the most finely balanced faculties of the brain, leading in individuals to a lowering of mental tone more distressing than many forms of physical ill-health, and in communities to a loss of morale and a proneness to excitement, passion, or scare, which has been the cause of many scenes of violence, riot, and insurrection.

Effects of town life on the nervous system.

The estimation of the frequency of disease of the nervous system is again a matter of difficulty, partly because the deaths of persons so afflicted usually arise from intercurrent disorders, and are, therefore, registered under other headings, and partly because deaths due to "convulsions" amongst infants, so common in towns, are entered under the nervous system, and no indication is given of the primary disease of which the convulsions are a symptom, and to which heading they should properly be referred. On this point the Registrar-General, in the report already referred to, when considering the deaths from diseases of the nervous system in the 10 years from 1871 to 1880, points out that, though the number has not practically altered, the age incidence of the mortality has undergone very notable alteration. The deaths in the earliest age period, 0·5, have fallen very greatly, owing to increased accuracy in recording the primary cause of deaths from "convulsions," while this diminution is fully counterbalanced by the great increase of mortality amongst individuals who fall into the age periods of from thirty-five years upwards. He goes on to say that, allowing for greater carefulness of statement on the part of medical men, "the increase was doubtlessly in great measure real, and is probably to be explained by the constantly increasing strain upon the nervous system involved in the keener competition and other conditions of modern life." That these conditions are found more in towns than country districts is an obvious fact; and, broadly speaking, the mortality from diseases of the nervous system is found to agree with these conclusions, being highest in urban counties such as Lancashire (3·07 deaths annually per 1,000 persons living) and the East and West Ridings of Yorkshire (3·37 each), and lowest in such agricultural counties as Cambridge (2·16) and Suffolk (2·22).

Turning now to the external surroundings of the townsman, it is clear that the natural conditions have been widely departed from. The excessive crowding of communities into a small area exhausts, as it were, the natural yield of the locality of the three great sanitary requisites—good food, good water, and good air. An artificial supply has to be resorted to with but indifferent success—one or all of them is lacking in quantity or quality—the defects act and react on the health of the community, many side questions and indirect effects enter into the calculation, with the general result that it may be said, as a rule, that the health of a community varies indirectly with its density. The condition of each town, as compared with the country and with other towns, as to the supply of these requisites, varies in the greatest degree, different parts and different classes of each community being differently affected.

The three great sanitary requisites.

Food is, as a rule, more easily obtained in all towns than it is in the country; for provisions are often cheaper, wages are higher, and money is more plentiful. A more varied diet, also, is within reach of the townman, though the quality of the food, and more especially that of the vegetables, is undoubtedly inferior. These questions affect the different classes in different ways. The inferior quality does not much affect the well-to-do, for most things can be had good by paying for them; but the ease with which variety and luxuries can be obtained, without doubt tends to over-eating, a habit which a distinguished physician has said sends nine patients out of ten to his consulting-room. The poor man, on the other hand, is the gainer, probably, by such variety and luxury as he can afford in diet, and it is only the bad quality that he has to suffer from.

But there is one question of diet in which all classes must meet on common ground, and that is alcoholic excess. Whether it be the ease with which it can be obtained, the hospitable temptations of many neighbours, the craving for stimulants created by work at high pressure, or all of these and others combined, there is very little doubt that more alcohol is drunk per head amongst town populations than among that of the rural districts; and no doubt at all that its ill-effects are more seen when combined with absence of severe muscular exercise; so that not only is there, as the Select Committee of 1878 reported, more

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drunkenness in large towns, but the general loss of health due to habitual, though less excessive, indulgence is more seen amongst town populations.

Taking next the question of water supply, the condition of one town is found to vary in a wide degree from that of another; in some few water is still, no doubt, neither plentiful nor pure; but it cannot be denied that there are many towns whose supply leaves little to be desired.

It is in this department of public health that sanitary science has made, perhaps, more progress than in any other. When one reads of the condition of such a town as Bradford in 1844, where water (quality not mentioned, was sold to the poor at three gallons a penny, and contrasts it with modern conditions, such as exist at Glasgow and even London, one cannot avoid the conclusion that it is due largely to improvements in water supply that the health of the community generally in recent years has been so greatly improved, and that the death-rates, especially of urban districts, are so materially lowered; indeed, when one considers the haphazard nature of the supply of many rural villages, a shallow well or a neighbouring ditch, there is little doubt that the water supply of towns as a whole is in the present day better than that of the country.

(To be continued.)

A NEW HEALTH RESORT.

To those who desire a lovely and healthy spot where they may spend a few weeks away from the hurry and turmoil of London, Crowborough Hill, a delightful position on an elevation of 796 feet may be indicated. It is in Sussex, 32 miles from London, 7 from Tunbridge Wells, and is very easy of access. There is certainly no promenade, no band, no shops; in short, nothing to please those who only care for a fashionable watering-place, but in compensation there are picturesque walks and drives innumerable, distant views rivalling many lovely parts of Scotland, wild moorland and forest stretching for miles around, hedges and banks covered with lovely wild flowers and ferns; good meat, delicious milk, butter, and bread, plenty of fresh eggs, and, above all, pure delicious water is to be had; and what can mortal want more?

Apartments can be secured at a very reasonable rate, from two guineas and upwards for three rooms, and all are clean. There is also a very comfortable, well-conducted boarding-house, the windows commanding extensive views.

The houses are scattered over a wide district; the best apartments are, however, close to Crowborough Cross; here is also the post office, the butcher's, and baker's.

There are two churches, one purely Evangelical, on "The Green," the other more than half a mile from the Cross, and rather High Church. There is also a Free Church and a Dissenting chapel or two.

There are one or two medical men residing at Crowborough, but the healthy appearance of the inhabitants, who number over 1,630, lead one to fancy their services are not often required.

The air is very pure and bracing, the soil dry and gravelly, and there are some strong calybeate springs in the neighbourhood. For the last four or five years the fame of Crowborough as a health resort has been steadily increasing; it is gradually getting better known, and many medical men are now sending their patients there. Great benefit, and in an incredibly short period, has been derived by all those who have gone there in search of health; the visitor seems to be drinking in at every breath some grand invigorating tonic. A glance at the contented happy faces of the sturdy little children is a strong proof of their good health.

Crowborough Station lies two miles below Crowborough Cross. It is on the London, Brighton, and South Coast Railway, and is reached in considerably less than two hours; passengers for Crowborough changing at Groombridge. Flies are to be had at the Railway Inn close to the station.

THE REGISTRAR-GENERAL'S LAST QUARTERLY RETURN.

By J. Hampden Shoveller.

The quarterly return of marriages, births, and deaths in England and Wales has just been issued by the Registrar-General. The statistics relating to marriages are for the first quarter of this year, while those relating to births and deaths are for the three months ending June last. The marriage, birth, and death-rates were all below their respective averages. The mean temperature of the air during the quarter at the Royal Observatory, Greenwich, was 54°·5, and was 2°·3 above the average for the corresponding quarters of 118 years. The rainfall at Greenwich amounted to 7·22 inches, and exceeded by 1·64 inches the average amount in the corresponding periods of seventy-four years. The amount of rain measured exceeded the average in each month of the quarter.

During the first quarter of this year the marriages of 81,926 persons were registered in England and Wales, equal to an annual rate of 11·5 per 1,000 of the population. This marriage-rate showed a further slight increase upon that recorded in recent corresponding quarters, but was 0·5 below the mean rate in the first quarters of the ten years 1879–88. The lowest county marriage-rates were recorded in Herefordshire, Buckinghamshire, and Middlesex; the highest in Devonshire, Cornwall, Monmouthshire, and Northumberland.

The 227,581 births registered in England and Wales in the second quarter of this year corresponded to an annual rate of 31·5 per 1,000 of the population, estimated by the Registrar-General to be rather more than twenty-nine millions of persons. This rate was 2·3 below the mean rate in the corresponding quarters of the ten years 1879–88, although it slightly exceeded that in the second quarter of 1888, which was the lowest on record. In the several counties the birth-rates in the quarter ranged from 25·3 in Sussex, 26·4 in Herefordshire, and 26·9 in Surrey, to 35·7 in Durham, 36·0 in Essex, and 38·9 in Monmouthshire. The 227,581 births registered in England and Wales last quarter exceeded the deaths by 103,128; this represents the *natural* increase of the population. It appears, from returns issued by the Board of Trade, that 131,590 emigrants embarked during last quarter from various ports of the United Kingdom at which emigration offices are stationed; excluding foreigners, and distributing proportionally those whose nationality was not distinguished, the emigrants of British origin were 95,067, including 51,343 English, 9,664 Scotch, and 34,060 Irish. The proportion of emigrants last quarter to a million of the respective populations of the three divisions of the United Kingdom were 1,769 from England, 2,370

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from Scotland, and 7,222 from Ireland; each of these proportions showed a considerable decline from that recorded in the second quarter of 1888.

From returns published by the Local Government Board it appears that the average number of paupers relieved on the last day of each week during the quarter ending June last was 707,385, of whom 178,019 received indoor, and 529,366 outdoor relief. The proportion of the population in receipt of pauper relief showed a further decline from that recorded in the corresponding periods of the three preceding years.

The deaths of 124,453 persons were registered in England and Wales during the three months ending June last, equal to an annual rate of 17·2 per 1,000 of the estimated population. This death-rate was 1·8 below the mean rate in the corresponding periods of the ten years 1879–88, and was lower than that recorded in the second quarter of any year since the commencement of civil registration in 1837. In the various counties the death-rates last quarter ranged from 12·7 in Sussex, and 13·2 in Surrey and in Huntingdonshire, to 20·4 in Northumberland, 20·5 in Monmouthshire, and 20·8 in Lancashire. In the principal urban districts, comprising the chief towns, and containing an estimated population of more than eighteen and a half millions of persons, the rate of mortality last quarter was equal to 17·7 per 1,000; in the remaining and chiefly rural population of more than ten and a quarter millions, the rate was 16·3. The urban rate was 1·6, and the rural rate 1·5, below the mean rates in the second quarters of the eight years 1881–88. In equal numbers living the deaths were 109 in the urban to 100 in the rural population, slightly exceeding the average proportion in the eight preceding corresponding quarters.

In the twenty-eight large English towns, including London, and having an estimated population of nine and a half millions of persons, the deaths registered in the quarter under notice corresponded to an annual rate of 18·2 per 1,000, which exceeded by 0·5 the general urban rate, but was 1·8 per 1,000 below the mean rate in these towns in the corresponding periods of the seven years, 1882–88. While the death-rate in London did not exceed 16·0 per 1,000, it averaged 20·0 in the twenty-seven provincial towns, among which it ranged from 14·7 in Brighton, 14·9 in Leicester, 16·1 in Derby, and 16·2 in Bristol, to 23·8 in Plymouth, 23·9 in Blackburn, 28·0 in Manchester, and 32·6 in Preston. The rates of mortality at different ages in the twenty-eight towns showed the usual wide variations, owing principally to the differences in the sex and age distribution of the population. The death-rate among infants, measured by the proportion of deaths under one year of age to 1,000 registered births, ranged from 110 in Portsmouth and in Brighton, and 117 in Cardiff, to 179 in Blackburn, 185 in Oldham, and 248 in Preston. The rate of mortality among persons aged between one and sixty years did not exceed 6·7 in Leicester, and 7·9 in Norwich, while it was equal to 14·6 in Plymouth, 18·6 in Manchester, and 19·6 in Preston. Among persons aged upwards of sixty years the death-rate ranged from 54·7 in Cardiff, and 55·7 in Leicester, to 90·5 in Halifax, and 92·6 in Manchester.

The 124,453 deaths registered in England and Wales during the quarter ending June last included 13,236 which were referred to the principal zymotic diseases; of these, 4,464 resulted from measles, 3,405 from whooping-cough, 1,970 from diarrhœa, 1,347 from scarlet fever, 1,041 from diphtheria, 999 from "fever" (including typhus, typhoid, simple and ill-defined forms of fever), and 10 from small-pox. These 13,236 deaths were equal to an annual rate of 1·83 per 1,000, which was 0·15 below the average rate in the ten preceding corresponding quarters. The zymotic death-rate in the twenty-eight towns last quarter averaged 2·34 per 1,000, and ranged from 0·85 in Norwich and 0·86 in Derby, to 4·47 in Manchester, 5·15 in Bolton, and 10·09 in Preston. In fifty other large town districts the zymotic death-rate averaged 2·06 per 1,000, while in the remainder of England and Wales it was 1·49 per 1,000.

Measles was the most fatal zymotic disease in England and Wales during the quarter under notice. The 4,464 deaths attributed to this disease were equal to an annual rate of 0·62 per 1,000, which exceeded by 0·14 the average rate in the second quarters of the ten preceding years. In the twenty-eight large towns the death-rate from measles averaged 0·82 per 1,000, and ranged from 0·06 in Portsmouth and in Sunderland, and 0·14 in Cardiff, to 2·74 in Hull, 2·87 in Bolton, and 5·35 in Preston. Among the fifty other large town districts the measles death-rate averaged 0·76 per 1,000, while in the remainder of England and Wales, after deducting these seventy-eight towns, the rate was only 0·47 per 1,000. The 3,405 fatal cases of whooping-cough were equal to an annual rate of 0.47 per 1,000, and almost corresponded with the mean rate in the ten preceding June quarters; among the twenty-eight great towns the rate of mortality from this disease averaged 0·61 per 1,000, and was highest in Plymouth, Birkenhead, Oldham, and Preston. The 1,970 deaths referred to diarrhœa were equal to an annual rate of 0·27 per 1,000, which slightly exceeded the mean rate in the corresponding quarters of the ten preceding years. In the twenty-eight large towns the rate of mortality from diarrhœa averaged 0·34 per 1,000; it exceeded that recorded in the June quarter of any year since 1882, and was highest in Salford, Manchester, and Bolton. The 1,347 fatal cases of scarlet fever corresponded to an annual rate of 0·19 per 1,000, which was as much as 0·16 below the average rate in the second quarters of the ten preceding years. In the twenty-eight great towns the scarlet fever death-rate averaged 0·23 per 1,000, and was highest in Salford, Sheffield, Blackburn, and Plymouth. The 1,041 deaths attributed to diphtheria were equal to an annual rate of 0·14 per 1,000, and slightly exceeded the average rate in the corresponding periods of the ten preceding years. In London the rate of mortality from diphtheria was as high as 0.29 per 1,000, while it averaged only 0·13 in the twenty-seven provincial towns, among which, however, this disease showed fatal prevalence in Plymouth, Bolton, and Salford. The 999 deaths referred to different forms of "fever" (principally enteric) were equal to an annual rate of 0·14 per 1,000, against an average of 0·22 in the ten preceding corresponding quarters. In the twenty-eight large towns the fever death-rate averaged only 0·14 per 1,000, which, with the exception of the rate in the second quarter of 1887, which was also 0·14, was the lowest on record; among these large towns the highest mortality from fever occurred in Liverpool, Salford, and Preston. The fatal cases of small-pox in England and Wales, which had declined from 582 to 8 in the five preceding quarters, were 10 during the three months under notice; of these, 1 occurred in Manchester, but not one in London or in any other of the twenty-eight large towns. Of the remaining 9 cases, 3 were recorded in Ramsgate sub-district,

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resulting from a case said to be imported from Ostend. Only two small-pox patients were under treatment in the Metropolitan Asylum Hospitals during the quarter under notice, and none remained at the end of June.

The causes of 113,906, or 91·6 per cent. of the 124,453 deaths in England and Wales last quarter, were certified by registered medical practitioners, and 7,027, or 5·6 per cent., by coroners in inquest cases. The causes of the remaining 3,517, or 2·8 per cent. of the deaths, were not certified. In London the proportion of uncertified deaths did not exceed 1·0 per cent., while it was 3·1 in the remainder of England and Wales. In the twenty-seven provincial towns the proportion of uncertified deaths averaged 2·7 per cent., and ranged from 0·2 in Plymouth, and 0·6 in Sunderland, to 4·0 in Huddersfield, 4·2 in Sheffield, 5·3 in Halifax, and 5·4 in Liverpool.

Analysis of the Vital and Mortal Statistics of the Twenty-eight Great Towns, dealt with in the Registrar-General's Weekly Returns, for the Second Quarter of 1889.

Towns.	Estimated Population middle of 1889.	Births.	Deaths.	Annual Rate per 1,000 Living. Births.	Deaths.	Principal Zymotic Diseases.	Deaths from Principal Zymotic Diseases.	Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Whooping-cough.	Fever.	Diarrhœa.	Deaths of Infants under one year of age to 1,000 Births.	Rate per cent. of Uncertified Deaths.
28 Towns	9,555,406	74,889	43,298	31·5	18·2	2·3	5,579	1	1,959	554	488	1,444	345	788	138	2·1
27 Towns	5,203,668	41,940	25,954	32·3	20·0	2·7	3,532	1	1,292	405	170	903	242	519	152	2·7
London	4,351,738	32,949	17,344	30·4	16·0	1·9	2,047	—	667	149	318	541	103	269	120	1·0
Brighton	121,807	744	445	24·5	14·7	1·1	32	—	13	3	3	8	1	4	110	3·1
Portsmouth	141,253	1,270	576	36·1	16·4	1·7	61	—	2	1	9	30	8	11	110	0·9
Norwich	94,510	831	405	35·3	17·2	0·9	20	—	8	2	1	4	3	2	129	1·0
Plymouth	78,225	626	464	32·1	23·8	4·4	86	—	4	43	6	26	2	5	152	0·2
Bristol	229,361	1,682	925	29·4	16·2	1·7	97	—	47	8	3	12	11	16	120	2·4
Wolverhampton	82,544	662	393	32·2	19·1	1·8	37	—	11	—	2	14	2	8	166	1·8
Birmingham	454,835	3,665	1,986	32·3	17·5	1·9	211	—	39	25	19	81	9	38	143	2·1
Leicester	150,520	1,255	559	33·5	14·9	1·3	48	—	7	—	3	9	7	22	164	3·4
Nottingham	237,812	1,759	991	29·7	16·7	1·9	111	—	14	7	1	59	12	18	164	1·8
Derby	98,529	710	395	28·9	16·1	0·9	21	—	—	5	1	2	5	8	125	1·8
Birkenhead	102,541	790	416	30·9	16·3	2·5	64	—	13	5	1	39	5	1	137	1·2
Liverpool	606,562	4,416	2,908	29·2	19·2	2·6	387	—	87	61	10	113	54	62	150	5·4
Bolton	114,670	976	647	34·2	22·6	5·1	147	—	82	10	10	18	6	21	171	2·6
Manchester	378,800	3,440	2,647	36·4	28·0	4·5	422	1	256	22	23	45	13	62	174	2·2
Salford	234,283	1,823	1,157	31·2	19·8	3·2	183	—	35	49	30	12	23	34	150	3·2
Oldham	142,405	1,067	775	30·1	21·8	3·4	119	—	31	11	1	56	8	12	185	3·6
Blackburn	121,275	1,091	721	36·1	23·9	3·5	106	—	32	28	—	22	6	18	179	2·1
Preston	104,194	1,022	847	39·4	32·6	10·1	262	—	139	5	7	84	13	14	248	3·3
Huddersfield	92,825	534	445	23·1	19·2	2·0	47	—	28	6	2	2	4	5	163	4·0
Halifax	81,080	587	471	29·1	23·3	2·5	50	—	39	—	3	—	4	4	162	5·3
Bradford	235,056	1,605	1,058	27·4	18·1	2·3	134	—	13	12	3	70	5	31	171	1·7
Leeds	357,449	3,052	1,967	34·3	22·1	2·8	251	—	143	15	6	27	8	52	150	1·4
Sheffield	327,227	2,724	1,581	33·4	19·4	2·9	236	—	71	70	8	47	14	26	140	4·2
Hull	208,017	1,764	1,056	34·0	20·4	3·9	202	—	142	2	5	30	4	19	145	3·8
Sunderland	134,193	1,265	655	37·8	19·6	1·3	42	—	2	8	3	14	5	10	139	0·6
Newcastle-on-Tyne	160,983	1,504	952	37·5	23·7	2·7	107	—	30	4	8	45	5	15	151	2·8
Cardiff	112,712	1,076	512	38·3	18·2	1·7	49	—	4	3	2	34	5	1	117	1·0

ON THE EMPLOYMENT OF LEADEN PIPES IN CONVEYING WATER FOR ORDINARY USE.

By A. Hamon (Paris).

(*Continued from page* 567.)

CHAPTER VI.

In May 1886, the Consultative Committee of Public Hygiene of France caused the question of connecting iron pipes with leaden pipes to be studied. J. Pouchet was the reporter, and came to the following conclusion: "The fears entertained as to the possible dangers of lead-poisoning through water conduits formed by iron pipes connected with lead pipes seem so far justified."

The Board of Health and Salubrity of the Department of the Seine in its sitting of 18th March 1887, appointed a committee, composed of MM. A. Gautier, Proust, Schutzenberger, Troost, and Alphand, to examine the dangers which might arise from the lead coating forming on open pipes established by M. Alphand, throughout the whole course of the Arcueil aqueduct.

The length of this lead coating is from 450 to 550 yards; it is covered throughout the entire length with a whitish cement, which prevents the contact of the lead with the water. In the sitting of July 22, 1887, Prof. Schutzenberger read his report. The commission had previously taken away twelve gallons of water above and an equal quantity below the part of the aqueduct lined with lead. After analysis, it was ascertained that no appreciable quantity of lead could be traced in the water. This result does not astonish us in the least; but some people have already taken advantage of it to further deny the action of Paris water upon lead, and in consequence to affirm the harmlessness of its use in the water conduits.

There is no analogy between the Arcueil aqueduct coated with lead and the pipes employed in houses. In fact, the Arcueil aqueduct has a diameter of 2·18 yards, its circumference is 6·84 yards; the half only is coated with lead, that is to say about 3·42 yards in length for the half circle coated with lead. For our purpose, let us take an equal length for the lead pipes of houses and the lead-coating of the Arcueil aqueduct. We take for this length 1·09 yards. The surface of the lead upon a length of 1·09 in the said aqueduct is therefore $3{\cdot}42 \times 1{\cdot}09 = 3{\cdot}64$ sq. yards. There passes through the said aqueduct during twenty-

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four hours 3,531,658 cubic feet of water which are in contact with the 3·64 of surface. One cubic foot is therefore in contact with a surface of $\frac{3{\cdot}64}{3531658}$ = 0·00000103 sq. yards, viz. 0·00067 sq. inch of lead.

Let us take a lead water pipe in the houses of the same length, 1·09 yard; the diameter of the pipes generally employed is one inch. The circumference is 3·14 × 1 = 3·14 inches. The surface for 1·09 yard is therefore 3·14 × 1·09 = 3·42, viz. 122 sq. inches. Upon an average there passes through such water pipe 117,582 cubic feet per day of twenty-four hours. This volume is in contact with the surface of the lead, viz. 122 sq. inches. One cubic foot of water is therefore in contact with a surface of $\frac{122}{117582}$ = 1·04, viz. 1·04 sq. inch of lead.

Let us compare the two cases.

A, aqueduct water, 1 f.c. in contact with 0·00067 sq. inch. B, water house pipe, 1 f.c. in contact with 1·04 sq. inch. Hence it may be seen that water B is in contact with $\frac{1{\cdot}04}{0{\cdot}00067}$ = 1,550 times more lead surface than water A.

With water A there is, therefore, 1,550 times less danger than with water B.

We have seen that water A passed through a length of 550 yards of lead; generally the water pipes in houses have a minimum length of 90 feet.

So that water A may be in the same conditions as water B, it would be necessary for it to pass through a length 1.550 times greater, viz. 1,550 × 90, or 46,500 yards in length, 26 miles. In fact, it goes through but 550 yards, it is therefore as if water B passed through $\frac{550}{1550}$ or 1·06 feet. None of the people who object to the employment of leaden pipes have said that any water going through 1·06 foot of lead pipes contained any quantity of that metal. That is, however, what those who are in favour of it wish them to say.

Besides, we beg to remark: firstly, that in the preceding comparison, it is taken for granted that water B is running without any interruption, which is not the case; secondly, that water A is constantly running; thirdly, that the leaden pipes of the Arcueil aqueduct have been coloured with milky cement, and that consequently there is no contact between water and lead. Therefore it is impossible, if people are impartial, to compare the conditions of the water distributed throughout the houses with that of the water of the aqueduct.

It is impossible, for the same reason, to argue from the fact that the water of the aqueduct contains no lead that the water of the domestic pipes does not contain any.

Scientists who are in favour of the employment of lead pipes cannot, while laying stress on the experiments of Prof. Schutzenberger, deny the action of Paris waters on lead; a fact which the writer thinks he has fully proved.

The Society of Public Medicine and Professional Hygiene, in its sitting of October 26, 1887, discussed at great length the question of tinning lead pipes, and it was said upon this subject "that lead must be absolutely proscribed in every article which may come in contact with articles of food." This is implicitly condemning lead pipes.

In the *Journal of Hygiene*, and *le Petit Médecin*, we see the conclusions of *la Societa Fiorentina d'Igiene* and of the International Congress of Hygiene reported therein. Dr. Jean Liva, the author of the article in *le Petit Médecin*, strongly deprecates the further use of lead pipes. Drs. E. Monin, C. Degoix, and E. Bertherand, share his opinion and support the vote of the Congress of Vienna.

At the Society of Practical Medicine, a discussion took place, following a report of Dr. Roulin, in which MM. Gautrelet, Dujardin-Beaumetz, and Danet took part. That discussion did not lead to any conclusion; M. Gautrelet lifted up his voice against the dangers of lead, whilst MM.-Dujardin, Beaumetz, and Danet (although he had signed the petition of M. de Laval) had proclaimed themselves champions of its harmlessness.

M. E. Maumené, the chemist, relating in *Le Cosmos* the experiments of Max Müller, advises the suppression of lead pipes everywhere, and the substitution of sandstone or india-rubber pipes.

Sweden.

At Stockholm, in 1863, Dr. Hamberg drew the attention of the Swedish Medical Society to leaden water pipes. In the communication made by him, he quotes the opinion of Pereira Oesterlein, who had pronounced against lead pipes in consequence of various cases of lead poisoning, of which he had been a witness. He concluded by declaring that the water pipes should be emptied every morning. The Swedish Medical Society invited the administration to have the question studied. Drs. Stenberg and Wimmerlest were intrusted with the investigation. Their experiments have already been noted. In the statement of their researches, these learned men declared that with old pipes the quantity of lead dissolved in the water diminishes, but that it cannot be inferred that the lead disappears entirely. According to Drs. Hamberg, Stenberg, and Wimmerlest, it would be better not to use leaden pipes in future.

After that discussion, the Swedish Medical Society invited the administration to make known to the public that it would be advisable to forbid the use of leaden pipes, and that at any rate, it was a good thing to let the water run before using it.

It was only in 1886 that the second section of the Municipal Council of Stockholm, according to the information gathered by us from Professor F. Eklund, passed the regulations, of which the fourth paragraph says:—"As domestic water pipes, and in the grounds, it is only permitted to use galvanized iron and tin-lined lead pipes; when the diameter of those pipes is ten or more centimetres, it is necessary to employ only cast-iron pipes lined with the usual solution. It is forbidden to employ other materials and fittings than those approved by the second section of the Municipal Council."

Finland, Turkey, Greece, Roumania.

Dr. Palmberg has written to us that in Finland it is not allowed to use leaden pipes. This scientist is, moreover, opposed to the employment of those pipes, which have been formally condemned in one of his works.

In 1884 Dr. Pechedimaldji wrote in the *Medical Gazette of the East* an article in which he approves of our way of thinking, and in which he expresses the wish that the Ottoman Government should employ measures of restraint. Dr. Utudjian, in 1888, translated into the Turkish language our pamphlet on lead and potable water. He published it in his *Sanitary Library* with notes of approval.

Professor Bamba, of Athens, has treated that question extremely well in his paper on hygiene. According to him, leaden pipes are injurious.

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Professor Felix, of Bucharest, declared at the Congress of Hygiene, at Vienna, that the Board of Health of Bucharest had, in 1887, asked for interdiction of the use of leaden pipes, and that in compliance with his request the use of lead pipes was forbidden in that town.

Since 1866, R. Llorente y Lazaro turned his attention to lead water pipes, and declared them to be harmless because, said he, no case of lead poisoning has been detected. He recalled the opinion of Luzuriaga, who, at the end of the last century, attributed the disease known under the name of Madrid colic to small quantities of lead contained in potable waters. According to Luzuriaga, the hard spring waters, rich in carbonic acid, which are used in Madrid, corrode lead very deeply, especially in summer, when the scarcity of water causes the lead pipes not to be always full. In fact, colics are more frequent in summer and in autumn than in the other seasons.

Spain.

The town of Santander, in 1873, was in a state of transformation so far as concerned the alimentary waters; the engineer Petitpierre Pellion raised the question, and obtained that the contract of concession of the water supply of the town should contain an article forbidding lead. Iron or tinned pipes alone were allowed.

The engineer Pedro Garcia Faria, in a work of great merit on the draining of Barcelona, rejects the use of leaden pipes. This opinion was shared by Drs. Gelabert, R. Rodriguez Mendès, and the Royal Academy of Medicine and of Surgery of Barcelona. This learned body, in a lucid report, made at our request by Dr. J. Cabot y Rovira, have written as follows:—"Lead water pipes and reservoirs must disappear, also any apparatus which may give similar results."

In 1886, Garcia Faria made a series of analyses, which showed the presence of lead in the waters of Barcelona. He came to the conclusion that lead was injurious in the form of water pipes.

La Sociedad Espanôla de Higiene, at the competition of 1886, awarded a prize to a paper from the engineer E. Estada (de Palma), in which it is said, "lead pipes ought to be everywhere replaced by iron pipes." According to the engineer de Luscan y Garcia, calcareous waters form a protective coating, and consequently there is no danger in using them.

At Vienna, since 1880, a decree or compulsory regulation concerning the domestic water supply has made obligatory the use of sulphuretted lead or tin-lined lead pipes, to the exclusion of the common lead pipes.

Austro-Hungary.

In 1882, this question of water pipes was the subject of a lengthy discussion between Popper, Stolba, Belohoubek, Jensovsky, &c., at the Prague Board of Health, which voted, "the use of leaden pipes is rejected." The Board gave the preference to iron pipes. The following year a regulation was made by that Board, which the Town Council made compulsory. In that regulation, it is said, "In the branches destined for potable purposes tin-lined lead pipes must be employed. The common lead pipes are absolutely forbidden. The other materials recognized as harmless may be used."

At Buda Pest, according to information sent to us by the Director of the Waterworks, leaden pipes have no longer been used in all the new water conduits of that town for the last fifteen years. Tin-lined lead pipes only are employed.

On November 27, 1884, the Austro-Hungarian Minister published a decree concerning the establishment of water pipes in the houses. According to that decree "the materials permitted are wrought or cast-iron, not galvanized lead pipes, and tin-lined or sulphuretted iron pipes. The common lead pipes are only authorized when a trial has proved that the water supplied through them does not corrode lead. In the latter case some analyses of the water shall be made from time to time to see whether it is free from that metal." The Director of the Vienna Waterworks, the engineer F. Berger, in sending us that decree, wrote (March 11, 1886), "It has not yet been published nor become law, it is simply a direction given to municipalities to establish water supplies."

In 1887, the sixth International Congress of Hygiene was held at Vienna, we there read a paper entitled, "On the employment of leaden pipes for the conveyance of potable waters." In the discussion which followed, Professor Felix (Bucharest) supported us, whilst the engineer, Cacheux (Paris), quoting the experience of Schutzenberger, spoken of in the preceding pages, concluded by partly denying the danger caused through the use of leaden pipes. Dr. Rehatscheek (Aussig) made a few observations as to our conclusions; he wished that it should be carefully specified that waters used for all domestic purposes should not be supplied through leaden pipes. We answered M. Cacheux by the demonstration above related. The discussion was ended, and the fourth section, where it had taken place, voted our conclusions as follows: "The use of leaden pipes for the conveyance of potable waters (branches and mains), which is a violation of the most elementary laws of hygiene, ought to be forbidden by an Act of Parliament. All members of the Congress, each of them in his own respective country, should do his utmost to obtain such a law."

Professor Gawalowski has concluded from the numerous analyses which he has made, that "Spring waters contain always some lead if this metal is employed for the main joints; the amount of lead is greater in the morning than in the evening, because during the night there is a stagnation of the water."

In 1873, at the time when the lead war was raging in Paris, *la Gazetta del Popolo*, of Turin, published a few articles against the use of leaden pipes.

Italy.

Drs. Berruti, Domenico Giusto, G. Sormani, G. Strambio, J. Roncati, &c., have pronounced themselves against the use of leaden pipes.

At Rome, in 1885, the Royal Academy of Medicine appointed a committee in order to study the action of Roman waters upon that metal. Dr. Capranica, a reporter upon this question, which had been raised by us, found lead in the Roman waters after they had remained for one night in the pipes. He ended his report by advising the replacement, as much as possible, of lead pipes by iron pipes, recalling the words of Vitruvius previously quoted.

The researches to which Drs. Capronica and Colasanti had applied themselves, were made by reacting matters insufficient to detect any small particles of lead; that is the reason why we contended in Dr. Galli's paper against the few restrictions made by those learned men.

Drs. Cerasi and M. Spada did not make any restrictions, and have absolutely pronounced themselves against the use of lead pipes. The latter gives the preference to iron pipes lined with glass, according to Cooper's system.

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At Palermo, *la Societa d'Igiene*, through the writings of their engineer, E. Donatuti, has expressed the wish that the Town Council should forbid the use of those pipes.

At *la Societa Fiorentina d'Igiene* in 1886, we raised the question, and a committee was appointed, composed of Professors Bechi, Pegni, Biondi, and Giuntoli, in order to study the action of calcareous waters upon lead, and whether it would not be in the interest of hygiene to suppress the use of that metal.

That committee has made a report which la Societa Fiorentina d'Igiene has adopted in its sitting of April 21, 1887. Here are its conclusions:—1. Theoretically, lead pipes ought to be absolutely forbidden; 2. Practically, lead reservoirs ought to be absolutely forbidden, but lead pipes may be allowed on the following conditions:—(*a.*) With a complete lining of tin on the internal surface of the pipe; (*b.*) or with a coating of sodium sulphide, when its preventive effects shall be well proved; 3. The old water pipes may allowed when they do not give rise to obvious inconvenience, providing, however, that the first water should be got rid of before using them.

We approve the conclusions of this learned body, although we regret the paragraph (*b.*) in the 7th chapter; we shall show that sulphuretted pipes are not a protection. We shall point out also that the society was wrong in establishing a kind of confusion between common lead pipes and those lined with tin. In fact, la Societa Fiorentina d'Igiene concludes to forbidding the ordinary new lead pipes. The learned vice-president of that society, Dr. Faralli, had pronounced against those pipes since 1885.

At Naples a real campaign against the use of lead pipes was and is still carried on warmly and scientifically by Drs. Margotta, Zinno, Montefusco, Franco, Maramaldi, engineer Fulvio, MM. Novi, Gaeta. We have ourselves taken an active part in it.

The Town Council had appointed a committee to ascertain the action of the "Serino" waters on lead; that committee, composed of Professors Reale, Punzo, and Zinno, concluded on the presence of lead in the Serino waters and on the rejection of lead pipes. The Town Council, who were in favour of lead pipes, appointed a second committee, which, in its report, came to the conclusion that the particles of lead found in the Serino waters are infinitesimal, and that consequently there is no danger whatever.

The Town Council have not yet taken any preventive step in spite of the hot crusade against lead which the *savants* already catalogued continue to carry on.

The medical Press in the United States abounds in facts of every kind proving the danger of lead employed as water pipes. Drs. Ford, Bigelow, J. R. Nichols, J. C. Booth, H. Adams, C. Jackson, J. R. Chilton, Hayes, J. P. Kirkwod, Shier, the Polytechnic Association of the American Institute, J. H. Kingsbury, the Boston Committee of Physicians, S. L. Dana, Dussance, Doremus, Chandler, J. Bayles, J. Rohé, J. Stites, A. Hazlewood, R. Kedzie, C. Chamberlain, the Committee of the City of Lowell, the State Board of Health of Massachusets, J. G. Richardson, Renwick Lee, the State Board of Health of Minnesota, Fenner, &c. &c., have declared in some papers and reviews that the use of lead pipes for the conveyance of potable waters could not be too much condemned.

United States.

On the contrary, according to W. R. Nichols, O. Long, Gallagher, Johnson, Dudley, the Board of Consulting Doctors of Boston, the New York Academy of Medicine, and Drs. Coates, Dunglison, Hare, Aiken, McNaughton, Brinsmade, Hubbard, Crosby Muzzy, lead pipes do not present any danger with calcareous waters, because, during their long medical practice, those doctors have not observed any lead-poisoning cases.

According to J. J. R. Croes, there are 26 towns of more than 20,000 inhabitants which have completely given up the use of lead pipes. Many other cities employ iron or tin-lined lead pipes, together with leaden pipes.

In a communication to the Medico Chirurgical Society of St. Louis (United States), Professor Curtmann has shown that the waters of that town contained lead.

We have fought, in the *Sanitary Engineer*, against the opinion of Professor W. R. Nichols concerning the protective action of calcareous waters. From an inquiry of the Illinois Board of Health, it appears that lead pipes had not given rise to any accident in the towns of Pullman, Lichtfield, Bushnell, Carlyle, and Sparta, where they are in use.

In the *Journal d'Hygiene Populaire* of Montreal we have dealt several times with the question of leaden pipes. Professor Beausoleil, analyzing our first essay on the subject, begged the Town Council to forbid the use of lead. Our articles drew the attention of Drs. Desroches and Barry to the dangers resulting from its use. They observed and proved, with Professors Fafard and Jeannotte, some cases of lead-poisoning. Therefore, Dr. Barry was justly desirous of immediate preventive measures, which, however, he failed to obtain.

Canada.

At Buenos Ayres, Dr. E. R. Coni informs us that there is no regulation in respect to the water pipes; for that purpose he quotes the preventive vote of the Vienna Congress, and begs the Government to study such an important question.

Argentine Republic.

From all the records that we have quoted in the preceding pages, we conclude that—

1. In England, Germany, Netherlands, Brazil, Belgium, France, Sweden, Spain, Austria-Hungary, Italy, United States, Canada, Turkey, Greece, Finland, the majority of professors of dietetics have pronounced against the use of lead pipes.

2. In some of those countries there are many towns in which leaden pipes are no longer used.

A scheme has been set on foot for the sending of the poorer and less healthy children of the city of Aberdeen to the country for a fortnight's fresh air, and it is now in active operation. There are many hundreds of children who stand urgently in need of such a holiday as a help to both their physical and their moral health, but who have not the means of obtaining it, and it is gratifying that the citizens have come forward so readily to provide the necessary means. From a sanitary point of view there could be no better investment, for to keep the children of the city healthy is the surest way of making its men and women strong and capable.

Dr. James Wallace reports a large increase of scarlet fever in Greenock. During the month of June the number of cases amounted to 24 against, against 9 in the previous month. A few of the cases were traceable to others formerly reported, but there is good reason to believe that as many as 10 were due to direct or indirect communication with a wilfully concealed case which was only discovered in the stage of desquamation nearly four weeks after seizure. Early in the disease the patient had been seen by a medical practitioner, who informed the mother as to what was wrong, and instructed her to report. That, however, was not done.

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THE

SANITARY RECORD.

The Organ of the Association of Public Sanitary Inspectors of Great Britain.

AUGUST 15, 1889.

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The Editor will be glad to receive, for publication, announcements of meetings, reports of proceedings, and abstracts or originals of papers read at meetings of Medical Societies of Health, Public Analysts, and Sanitary Inspectors' Associations, &c.

Medical Officers of Health, Public Analysts, Town Clerks, Local Board Clerks, Sanitary Surveyors, and Inspectors, are requested to send Notices of Appointments and Vacancies to the Editor, care of Messrs. W. H. ALLEN & Co., 13 *Waterloo Place, S.W.*

THE SANITARY RECORD will in future be published by Messrs. W. H. ALLEN & Co., 13 Waterloo Place, S.W. All matters relating to the literary portion of the Journal, and all exchange journals, periodicals, books for review, and new inventions, should be addressed to the EDITOR at above address. All business communications relating to Advertisements, Subscriptions, &c., to be addressed to the MANAGER, at the same address.

THE COMPULSORY NOTIFICATION OF INFECTIOUS DISEASES BILL.

AT last the long-promised measure to provide for the compulsory notification of infectious diseases has been introduced into Parliament by the President of the Local Government Board, and although it is in our opinion not sufficiently "thorough," it contains some very useful clauses, and is one more rather tardy step in the direction of sanitary perfection. As originally drafted, the Bill did not propose to make the notification uniformly compulsory throughout the country. For obvious reasons, the duty of notifying was to be generally obligatory throughout the Metropolitan area, with its intertwined network of separate sanitary jurisdictions. But in the rest of England it was to be left to each local sanitary authority—rural, urban, and port—to adopt the Act if thought fit, the only formalities to be observed being to pass a resolution to that effect at a meeting of which special notice had been given, to advertise the resolution in a local newspaper, and to inform the Local Government Board.

There is undoubtedly much to be said in favour of not imposing this duty of notification upon ill-informed persons in the less thickly populated rural districts. But we fail to see that these contentions outweigh the advantage of having an uniform system in force. It must not be forgotten that these sparsely-peopled districts are not always as entirely secluded as they would appear to be. The milk supplies of London and of our large urban populations are derived from sparsely-populated country districts, and the frequency with which milk from an infected farm has given rise to serious outbreaks of disease in the urban districts abundantly shows the need for prompt supervision by the sanitary officers in the event of disease occurring amongst those connected with dairy farms and dairy produce. It is also desirable that infected children, and children exposed to infection, should be kept from school, and that prompt isolation and disinfection should, in the interests both of the patients and of the community, be placed at the disposal of infected families. Many an obscure outbreak of disease would be traced to its source under an uniform system of compulsory notification.

Moreover, with the notification universally compulsory, the chief objection at present raised to the system would to a great extent be overcome. The public would soon become familiar with its obligations and its advantages, and the fear that at present is felt by many medical men, that the system would improperly interfere with their confidential relations towards their patients, would disappear. The medical profession, as a whole, must not be misunderstood in regard to this matter. They are generally strongly in favour of the notification of infectious diseases as a means of arresting the spread of epidemics, and this view was expressed by Sir Walter Foster when speaking recently on their behalf in the House of Commons. But they urge that the duty of notifying should not be imposed upon them, inasmuch as that would constitute them informers, and would in practice tend to discourage heads of families from calling in medical advice. The method of notification is, therefore, really the only debatable point—whether it is to be made a specific part of each "occupier's" citizenship to notify the existence of infectious sickness in his house, or whether it should be cast on the medical attendant, or whether, again, it should be imposed both on the occupier and on the medical man. This last-mentioned or "dual" system is the one which Mr. Ritchie has adopted. It is the system which has been favoured year after year by the Select Committee on Police and Sanitary Regulations, and the experience of all the towns, some forty in number, in which it has been in force, is unanimously in favour of its usefulness and its smoothness in working.

Another objection advanced to compulsory notification is that the publication of the fact that infectious disease exists in a house would injure the business carried on at that house, and perhaps pauperise the family. But surely the use of this contention discloses a very serious public danger, and is really a strong argument in favour of compulsory notification. Those, however, who are conversant with the working of the system in various towns know that the contention is fallacious, inasmuch as the notification is regarded as confidential by the sanitary officers, and if the public health is not endangered the seal of secrecy is not broken.

One of the earliest beneficial results of the extension of the compulsory system will be to stimulate the provision by all sanitary authorities of proper hospital accommodation, either separately or in suitable combinations. On the whole, we look forward with confidence to the success of this latest measure of sanitary reform.

TENURE OF OFFICE OF SANITARY INSPECTORS.

A CURIOUS incident, and one which we fear has been misunderstood, has recently occurred in connection with the re-appointment of the sanitary inspector for the Skipton and Silsden districts. The officer's first year of office having expired, one of the authorities for which he acted resolved to re-appoint him for a period of three years, and doubtless the other authorities would have done likewise. But on the

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approval of the Local Government Board being sought, the sanction of that body was withheld on the ground that it was not their present practice to sanction such a re-appointment for a longer period than that for which the officer was previously appointed. We fancy that the Board have not made their position quite clear, and that their objection is in some way governed by the operation of the Local Government Act of last session. The Board have always advocated security of tenure for sanitary officers, and have fully recognized the fact that the periodical re-appointment of these officers constituted a great hindrance to sanitary progress. They would do well, therefore, to take the earliest opportunity of putting themselves right with the local authorities on this point, and explain what appears at first sight to be both an inconsistent and an impolitic step. We feel sure there must be some good reason for their action. It is to be hoped that the legislature will ere long grant to the sanitary inspectors of England and Wales the same security of tenure which has been granted to Scotch officers in the Scotch Local Government Bill, so that no officer may be dismissed without the sanction of the Central Authority, after careful examination of all the circumstances of the case.

THE BILL FOR PREVENTION OF CRUELTY TO CHILDREN.

We are all alike interested in the question of the better protection of children, which is the animus of the promoters of the Cruelty to Children Prevention Bill. This Bill, however, as it stands, deals not only with cruelty as the term is usually understood, but is also directed against harmful employments and the employment of any child under 17 years of age in any money-earning occupation; it is the latter bearing of the draft Act which we propose specially to consider. The common experience, and the usual method of practice among the middle classes of society, show that the years of childhood are, from an ultimate pecuniary point of view, best spent in preparation for the labours of adult years, and among the professional class money earning is put off till at least after the age of 21, or when the individual aims at the higher grades of professional success, till nearer 30 years. The promoters of the Bill argue "that children are regarded as having a commercial value too soon, and that even as a mere toiling machine for making income, the parent's wish to employ a child too early is a blunder, first to the child, secondly to the parents, and through them finally to the community." From the point of view of physiology, and the socialistic advantage of the community, including the parents and individual child, there can be no doubt that universal education of children, and devotion of at least the first 10 years of life to the growth and development of the body and the mental faculties, in the long run tend to the advancement of the nation. Of course this supposes that in the mean time the child is properly fed, clothed, and otherwise provided for without his own individual exertion. The Bill is an attempt to make a stand against the employment of children under the age of 10, and to provide that the practice should be put down by force of law everywhere, as being harmful to society. There can be no doubt that this principle, if practicable, is right, and that a general national improvement might be looked for as the result, if it be certain that without such employment all children can be provided for by their parents, but the latter is a large proviso, though one that belongs rather to the consideration of the statesman than the physician.

According to English law, children belong to their parents, not to the State; the burden of their maintenance falls upon the parents alone, except in a few cases when such misfortune as idocy, blindness, or the fact of being born dumb may to some extent make them chargeable to the State without the stigma of pauperism. The cry of Technical Education, which has many and influential supporters is a movement in rather opposite lines, though the two ideas are not diametrically opposed; the technical educator would deal with the child so as to render him more fit at an early age to become an efficient wage-earner. Mrs. Bancroft thinks that the early employment of children in theatres affords such an education as will fit some for an honest livelihood hereafter; these differences of opinion we cannot attempt to solve. It is certain that society and the children would benefit by abolishing employment under 10 years of age, and such a happy release for children is much to be desired; when the rule is inapplicable, the kind of labour and its effects upon the children should be carefully watched.

BYE-LAWS FOR SLAUGHTER-HOUSES IN THE COUNTY OF LONDON.

The London County Council have just given formal notice that in pursuance of the 37th and 38th Vic., cap. 67, they intend to apply to the Local Government Board for confirmation, after the expiration of one month, of bye-laws for slaughter-houses in the County of London. The bye-laws relate to (*a*) The conduct of the business of a slaughterer of cattle; (*b*) The structure of the premises in which such business is being carried on; and (*c*) The mode in which application is to be made for sanction to establish such business anew. The regulations under the third heading direct that the application be in the form prescribed, giving particulars as to the situation of the premises, and the arrangement and construction of the buildings, with plans and sections; and also a key plan of the locality, showing the site of all buildings, dwellings, streets, and places within 250 yards of such site. The regulations under the second heading direct that such slaughter-house shall have a floor-space of at least 100 square feet; that the walls to a height of 6 feet from the ground shall be substantially constructed of brick, stone, iron, or concrete, and that the roof be "properly constructed." The pens or lairs shall be separated from the slaughter-house by close partitions to a height of at least 5 feet in the case of cattle, and at least 3 feet in the case of sheep and pigs; all doors in such partition to be closely boarded. There are also regulations as to the width and maximum steepness of entrance, the light and ventilation, paving and drainage, water-fittings and wall covering of slaughter-houses. Lofts or rooms over slaughter-houses are forbidden, and so are openings to dwellings from slaughter-houses, pens, or lairs. It is also provided that a slaughter-house, pen, or lair, shall not contain any closet, privy, urinal, or stable, and that no closet, &c., shall be in direct communication with, or ventilate into a slaughter-house, pen, or lair. The penalty for not complying with any of the bye-laws under this heading is not to exceed £5, and in case of a continuing offence a penalty of £1 a day.

The regulations under the third heading require all

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all animals for slaughter to be kept in pens or lairs, and forbid animals not intended for slaughter, or the flesh of which would be unfit for human food, being kept on premises. To prevent over-crowding in the pens or lairs, it is ordered that in the case of cattle, there be not more than one animal to every 24 square feet of floor space; in the case of calves, there be not more than one animal to every 8 square feet; and in the case of sheep, lambs, and pigs, there be not more than one animal to every 6 square feet. No animal may be kept in a slaughter-house longer than may be necessary for the purpose of preparing it for slaughter; and sufficient wholesome food and water is to be provided in the pens or lairs. Slaughtering is forbidden in any part of the premises other than the slaughter-house. Slaughtering an animal within public view, or within the view of other animals, and giving unnecessary suffering, are also forbidden. The blood is to be caught in suitable vessels of non-absorbent material, furnished with close-fitting covers. All refuse residues from animals slaughtered are to be kept in closed vessels. Blood and refuse is to be removed from premises in closed vessels. The fat is to be kept freely exposed to the air while upon the premises; and all blood, refuse residues, hides, skin, fat, and offal is to be removed from the premises within twenty-fours hours of the completion of the slaughtering, and all such material is to be kept out of drains. The slaughter-house is to be cleansed within three hours after the completion of any slaughtering, and utensils and appliances are to be kept thoroughly clean. Floor, walls, and fittings are to be kept in good repair. The inside of the slaughter-house and fittings, not within 6 feet of the ground, and the internal walls and fittings of the pens and lairs, are to be limewashed, with hot lime-wash, between the 1st and 10th days of March, June, September, and December. Dung and offensive litter is to be removed from the pens or lairs at least once a day, and such place is to be cleansed as often as necessary. Ventilation of the premises is to be secured by direct communication with the external air being maintained; and the drainage and water supply is to be kept in order. The occupier is not to allow the slaughter-house to be used for any other purpose than the slaughtering and dressing of animals, the flesh of which is fit for and intended for human food. The occupier is not to allow any person other than himself and his servants to use the premises, unless he be authorized by the Council in writing. The occupier is to prevent a nuisance existing on his premises, and at all reasonable times to afford free access to the inspectors and other persons authorized by the Council in writing to inspect slaughter-houses. The penalty for breaking any of the bye-laws under this heading is not to exceed £5, and there is a penalty of £1 a day for a continuing offence. A Court of Summary Jurisdiction may, by summary order, suspend or deprive any person altogether of the right of carrying on the business of a slaughterer of cattle, as a penalty for breaking any of the bye-laws under this heading.

NUISANCE FROM ENSILAGE.

Farmers in some districts are exercised in their minds by the question whether ensilage can properly be termed a nuisance, and its removal or destruction ordered by magistrates. (See page 86.) Whether a particular silo is or is not a nuisance, in the legal meaning of the term, is a question of fact to be determined by the evidence. Ensilage certainly smells strongly under certain conditions. If it seriously interferes with neighbouring property, or with people's comfort, it is such a nuisance as the law can deal with; and proceedings, civil and criminal, may be brought with a view to its removal. It is, however, chiefly important to the owners of silos to know what proceedings can be taken. Under the common law; proceedings by way of indictment can be brought against anyone who causes a nuisance to the public, and a civil action may be maintained by any individual who can prove that he has sustained damage by reason of the existence of the nuisance. Such proceedings are troublesome and expensive, and not likely to be initiated unless the nuisance complained of is serious and likely to continue. The Public Health Act authorizes summary proceedings before magistrates for the suppression of some nuisances; and if a silo can be said to come within its meaning, its owner can be dealt with summarily, but not otherwise. The power to deal summarily with nuisances is contained in Section 91, which among the nuisances which may be so dealt with, includes any accumulation or deposit which is a nuisance, or injurious to health, "In the year 1882 Justices Field and Stephens decided that these words empowered magistrates to order the removal of heaps of smouldering cinders which gave off effluvia which were undoubtedly offensive, but which could not be said to be injurious to health. This decision followed previous cases in which a similar view had been taken by the judges, and has not been doubted since. There can, therefore, be no doubt that magistrates have power to entertain a complaint of a nuisance arising from a silo, and to order its removal, even though there is no suggestion that the smell is unhealthy. Whether a nuisance is caused must in each case be a question of fact. If a farmer selects a proper site for his silo, no one but himself and his workpeople is likely to be inconvenienced by the smell and he need fear no proceedings. If, however, he chooses to place it near dwelling-houses, or near a public road or footpath, the smell may very possibly be offensive to people who are under no obligation to put up with it, and proceedings for the suppression of the nuisance may very possibly be taken. The fact that it is convenient or profitable for him to place his offensive accumulation of fermenting vegetable matter where it happens to annoy other people will, of course, be no excuse for his so placing it, and he must not complain if he is fined for so doing. If, however, reasonable care be taken in selecting the site and keeping the silo closed up, there need generally be no risk of the law interfering.

Poetry for Plumbers.

"Tell me not in scornful numbers
Sanitation is a dream:
Woe be to the man who slumbers,
Thinking drains are what they seem.

"Drains are real, bad gas injurious:
If the grave is not our goal,
All past systems are but spurious:
Carefully redrain the whole.

"Ill-drained houses all remind us,
Sanitation is sublime:
Shunning the association,
Henceforth shall be held a crime."

—*Edinburgh Medical Journal.*

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NOTES OF THE MONTH.

OPEN-AIR LECTURES ON HYGIENE.

The Healthy Homes Society has been formed in Manchester with the very commendable object of giving open-air lectures on life, health, and home. It has been found that the people who occupy the houses in the unhealthy districts will not go to hear lectures in rooms. Hence the determination of a few resolute spirits to have meetings in the open air, and see if, by that means, something could not be done to get the people themselves to help in bringing about a better state of things. The first lecture of the series was given by Mr. William Simpson, who, standing on a piece of vacant land, took as his subject the laws of health, and found an attentive audience which included a fair proportion of those whom it is most desirable to influence, viz. the housewives. Dr. Aldred occupied the chair, and, together with the lecturer, impressed upon the audience the importance of cleanliness, fresh air, pure water, and due attention to diet. Mr. J. Sanders also addressed the assembly. The place for the gathering was well chosen, and the result should certainly be regarded as encouraging. This is a kind of open-air preaching which has our strongest sympathy, and the extension of which cannot but be productive of wholesome influences. We hope this crusade against dirt and disease may meet with the success it most richly deserves.

UNCLOSED COFFINS AND THE SPREAD OF DISEASE.

The removal of dead bodies in unscrewed coffins is a common practice which is fraught with considerable danger where death has resulted from an infectious disease. Therefore, in the interests of public health, it behoves sanitary and hospital authorities to do all they can to bring about its discontinuance. This reform will not be effected without considerable opposition from the friends and relations of the deceased person, as is evidenced by a letter addressed by the Secretary of the Westminster Hospital (Mr. Sidney M. Quennell) to the Rev. F. W. D. Small, referring to the case of a child who died from diphtheria. Mr. Quennell writes: "They (the parents and friends) resisted all our efforts to allow the coffin to be screwed down at once, notwithstanding the representations made to them that any other course was highly dangerous. He adds: "About 95 per cent. of the dead who are taken from the hospital are taken away in unclosed coffins, and you will easily understand that we are powerless to prevent it, and are only able to use entreaty and persuasion which we invariably do." "Were we," he continues, "to insist that all coffins should be screwed down before leaving the hospital, our motive for such a course would most surely be misconstrued; besides which I am afraid that we have no legal right to insist upon it." This is a question into which inquiry should be made.

THE "IMPENETRABLE APATHY" OF THE PLUMSTEAD LOCAL BOARD.

The sanitary condition of certain parts of Plumstead appears to have been for some time under the notice of the Mansion House Council on the Dwellings of the Poor. The defects in question were reported to the local board early in 1886, but were not remedied until December 1888. The Mansion House Council, in its communications with the Local Government Board, stigmatized this delay of three years in remedying the simple sanitary defects complained of as an evidence of the "impenetrable apathy" of the local board in sanitary matters. The local board appears to have taken exception to this charge of apathy, and by its order a letter was written to Mr. Hamer, the honorary secretary of the Mansion House Council, charging the Council with inaccuracy of statement, and calling for a withdrawal of the charge of apathy in its next annual report. This the Council refuses to do, and adheres to its charge of culpable apathy, which, in the face of the three years' delay, it does not regard as an exaggerated term to characterize the local board's attitude. The Mansion House Council admits an inaccuracy in reporting the death of an inmate of the implicated houses as occurring from typhoid fever instead of from phthisis, which was the certified cause of death, but adheres to the main facts as contained in its annual report. The correspondence to which we have alluded has appeared in the local press, and has, no doubt, raised a feeling of wonderment in the minds of many Plumstead parishioners as to how the functions of sanitary administration are discharged—if they ever are discharged at all—in those cases which are not taken under the ægis of a powerful voluntary society like the Mansion House Council on the Dwellings of the Poor.

THE DISSEMINATION OF KNOWLEDGE AS A PREVENTIVE OF DISEASE.

The contagiousness of tuberculosis and the means of protection therefrom are subjects which have been engaging the attention of the pathologists to the New York Board of Health. They have published a brief and comprehensive statement, the dissemination of which amongst the people will, it is thought, be of great service in minimising the disease. The following are the chief points which they wish to impress upon the public mind: (*a*) Tuberculosis is a distinctly preventible disease; (*b*) It is not directly inherited; (*c*) It is acquired by the direct transmission of the tubercule bacilli from the sick to the healthy; usually by means of the dried and pulverized sputa floating as dust in the air.

"THE WRONG BOTTLE."

The already long list of fatalities due to a want of care in the placing and handling of bottles containing poisonous liquids has been increased by the death of Fanny Marshall. The deceased took a quantity of a strong solution of ammonia in mistake for chloral which she was taking for sleeplessness, the bottles being alike. So long as ordinary medicine bottles are used indiscriminately as receptacles for all kinds of liquids, so long will these fatalities continue, and juries be called upon to pronounce the verdict "Death by misadventure."

MUZZLING DOGS.

Now that a general muzzling order has come into force throughout the Metropolitan district, it may not be uninteresting to quote what Mr. Alfred Cawdle, M.R.C.V.S.Lond., a known authority on dogs, has to say regarding, first, the necessity for adopting this means for stamping out rabies, and, secondly, on the alleged cruelty of the process. He says, "Notwithstanding all that has been written and

said against muzzling our canine pets, I feel convinced that this plan, enforced for a period not under twelve months, is the only thing which will ever eradicate the disease. Full well I know how very cruel many people consider this process, but from much observation I can assure them that a properly adjusted muzzle causes no pain, and in the majority of cases no inconvenience to the animals, else, indeed, so intelligent a creature would scarcely come to one and stand perfectly quiet to have the instrument put on. Furthermore, I have found that those dogs who were most opposed to the process at first, probably, from its strangeness, got thoroughly accustomed to the muzzle after two or three times wearing. Allowing, however, for the sake of argument, that there are animals who always find it inconvenient, surely, to stamp out an affection which causes annually so many agonising death beds; it were better for the space of a few months to sacrifice the feelings of one of our most valued pets during his daily walks than to hear of a stranger, or it may be a near relation, writhing under the influence of hydrophobia."

OBESITY AMONG LOCOMOTIVE ENGINEERS.

One feature of the American locomotive engineer's life has impressed itself upon the attention of Dr. G. W. Furey as a matter of direct observation, and that is the constancy with which obesity is found among those who have been on duty for any considerable time. Interviewing nineteen members of the craft, and carefully comparing their ages and weights on entering upon this occupation with their present ages and weights, Dr. Furey says, in the *Medical Bulletin*, that in an average of eleven and a half years, each man had gained an average weight of 31 lbs. Firemen, on the contrary, who had lived under like conditions, showed if anything a decrease in weight. He concludes that there is no other class of which the members are equally temperate, industrious, and healthy, who so uniformally take on obesity. He asks why is this true? There must, he says, exist a physiological or perhaps pathological cause, associated with and controlled by a peculiar condition of a mechanical nature, and this he believes to be the engineer being subjected to the motion of his engine while he is in a sitting position. "I am," he adds, "constrained however to wonder if this fact of his receiving the continuous jar and motion of the engine upon the lower part of the trunk, unrelieved by nature's spring, the legs, may not affect the spinal nerves as well as all the nerve centres in some occult manner, resulting in arrested tissue respiration.

PRECAUTION AGAINST FIRES.

It constantly happens that small fires arise from the careless way in which builders allow woodwork to enter into, or at least to approach very close to flues from stoves, &c. When such a thing happens it is usual to blame the local authority or their officers. Now in urban districts there are proper bye-laws in force which, if applied strictly to all new buildings, would obviate all risks of the kind we have alluded to, but of course it is impossible to exercise so constant a supervision over a reckless builder as to be absolutely sure that no wedged slip for joiners' work, for instance, shall be in dangerous proximity to a smoke flue. Certainly the bye-laws which are printed and circulated in urban districts are not always enforced with either energy or discretion. Who has not noticed how eager the local builders are to possess seats upon the District Board. They are not to be blamed for looking after their own interests, but it is time that the ordinary ratepayer began to look after his. and to insist that the bye-laws shall be rigidly enforced against all builders, whether members of the Board or not. So far we have spoken of new buildings in urban districts, but there remain the old buildings erected before the bye-laws came into force. These may be in a very dangerous state as regards danger from fire, but the local authority has no power to touch them. In rural districts there are no bye-laws as regards building in force, but generally the buildings are detached, and the risk of a general conflagration is much reduced; for when buildings begin to spring up in a rural district so that it obtains somewhat of an urban character, then urban powers are usually granted to the district, and bye-laws are sanctioned. We would point out, therefore, that bye-laws can only offer a partial protection to the public, and that no official interference can relieve them of the necessity for a certain amount of care on their own part. We have seen many cases in which a fire has occurred through the ignition of woodwork, but such ignition has been gradual, and in every case the householder had fair warning of what would occur, but put off taking the necessary steps to ascertain the cause of the scent of burning wood which was perceptible, until too late.

CASE OF ANTHRAX—INOCULATION.

In his last annual report to the Frome Rural Sanitary Authority, Dr. J. Parsons reported a case of blood-poisoning, after a very short illness. A man aged fifty-two and a boy had been employed in skinning the carcase of a cow found dying, or dead, in one of their master's fields. Whether they wounded their hands during the operation, or had sores on them before, was not ascertained; but a very short time after its completion, malignant symptoms appeared in both persons, and in spite of active treatment, they terminated fatally in the man. It was found that the cow had died of anthrax, or cellular gangrene, and the history of the case shows that where animals die of septic diseases, it is advisable that the carcases be buried entire and with as little contact as possible with human beings.

REGULATIONS UNDER THE DAIRIES, COW-SHEDS, AND MILK-SHOPS ORDER, 1885.

It is gratifying to note that urban sanitary authorities throughout the country are making regulations with respect to the dairies, cow-sheds, and milk-shops in their control. The last copy of regulations which has reached us is from Barnstaple, and the Town Council of that borough have no reason to be ashamed of them. The occupier is to give reasonable assistance to the officer inspecting the premises. Dairies and cow-sheds are to be sufficiently lighted and ventilated, and each cow is to be allowed at least 800 cubic feet of air space. Dairies and cow-sheds are to be kept in a clean and wholesome condition, the floor being thoroughly cleansed at least once a day, the inner surface of the walls painted or covered with hard impervious material, being thoroughly cleansed at least once a week, and the portions of the walls not so painted, &c., and the roof being lime-washed at least twice a year, viz., in May

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and October. Every building newly occupied as a dairy or cow-shed subsequently to the date of the coming into force of the new regulations, is to have a floor falling to a channel discharging over a properly made and trapped drain, situated outside the building. A supply of wholesome water is to be provided for every dairy and cow-shed. Milk stores and milk-shops and milk vessels are to be maintained in a thorough state of cleanliness. Milk intended for sale must not be kept in any place where it would be liable to become infected, or contaminated by any gas or effluvium from any sewer, drain, cesspool, or privy, or other source. The penalty for an offence in respect of any of the regulations is not to exceed £5, and in a case of a continuing offence a further penalty not exceeding £2 for each day after written notice of the offence from the Authority.

MEDICAL OFFICERS OF HEALTH SHOULD NOT BE MAGISTRATES.

THIS is the extraordinary decision at which the York City Council has arrived in considering the nomination of Mr. W. S. North (medical officer for the city) to a seat on the magisterial bench in connection with the proposed appointment of an additional number of city magistrates. Four names, it appears, had been submitted to the Lord Chancellor, of which Mr. North's was one, but the Committee to whom the Council had referred the matter advised that three only out of the four names submitted should be approved by the Council, and recommended that the nomination of Mr. W. S. North be not approved, on the ground that, as medical officer of health, it would sometimes be his duty to give evidence in cases heard before the City Bench. As to Mr. North's personal qualifications and fitness for the post there were no two opinions. He is recognised by all who have had the opportunity of judging as singularly able, of great independence of character, combined with great intelligence and aptitude for dealing with public questions both judicially and with impartiality. The ground of objection was one which ought not for one moment to have been seriously entertained, an objection easily met by Mr. North's withdrawal from the Bench on the hearing of any case in which he was concerned as medical officer of health. This is a step which magistrates, from one cause or another, are frequently called upon to take. Mr. North's special knowledge and experience would have been an acquisition to the bench, and it is to be regretted that a man so universally popular and so admirably suited for the office should be objected to on the sole ground that he is a paid servant of the citizens.

OFFENSIVE TRADES.

WE report on page 87 the appeal heard by the Glamorganshire Quarter Sessions against the decisions of the Llandaff magistrates that meat-boiling and bone-steaming were offensive trades. The 112th section of the Public Health Act, which prohibits the establishment of certain offensive trades in urban districts without the licence of the sanitary authority, does not in terms include either meat-boiling or bone-steaming among such trades, but it contains the general words "any other noxious or offensive trade, business, or manufacture." The meaning of this clause has been several times under the consideration of the superior courts, and it is settled that it only prohibits trades in which the substances dealt with are organic, and the offensive effluvia produced are in their nature similar to those resulting from the specified trades. Thus it has been held that brick-making and the frying of fish are not offensive trades which require the licence of an urban sanitary authority, but that bone-dealing when carried on in such a way as to produce smells from heaps of decomposing bones was. In the recent case the court, on the facts before them, decided that the meat-boiling, carried on in a manner similar to the boiling of tripe (which is one of the enumerated trades) and causing offensive odours, was an offensive trade; but that bone-steaming carried on in closed boilers was not. The decision—even if it were binding on other courts, or on the same court if the evidence were different—does not seem to lay down any principle for future guidance. It turned principally, if not entirely, on the facts proved with reference to the case then before the court. The Chairman certainly is reported to have ruled that on the charge of bone-steaming evidence that a nuisance was in fact produced was inadmissible. The reasons for this ruling are not, however, given and we do know whether it turned on the particular facts, or on the chairman's view of the meaning of the Act. If the latter, we cannot agree with it; but if it merely relates to the case before him, it may have been right. The evidence given is worth reading, as a sample of what may be said on one side and the other in such cases; but the decision is of no great importance except, to the particular works and the locality affected by it.

OPEN SPACES IN THE METROPOLIS.

THE Metropolitan Public Gardens Association have done good work in securing the provision of open spaces and recreation grounds in many parts of the metropolis; but the need for their exertions has by no means ended. In Bethnal Green there is an open space of six acres called the Bethnal Green Poors' Land. The grounds were purchased and enclosed and granted to trustees in 1690, "for the prevention of any new buildings thereon, and for the yearly relief of the poor"; and up to now have remained free from buildings, as intended by the donors. Latterly the ground has been leased to the Bethnal Home Asylum, and used wholly or partly as garden. The lease expires shortly, and the majority of the trustees (most of them being persons interested in the government of the parish of Bethnal Green) propose to sell parts of the ground to the guardians, the vestry and the Free Library trustees of the parish, as sites on which an infirmary or vestry hall and a free library may be erected. All these buildings will no doubt be useful in the parish, and probably ought to be erected; but there is no necessity for putting them on ground which is and ought to remain vacant. The guardians and vestry and library trustees, of course, think the vacant sites specially suitable, because other sites would most likely be more expensive. If the Poors' Land can be acquired, there will be no expensive in clearing the sites, and the ratepayers will, therefore, have to find less money for the new buildings, which, of course, will be to the credit of those who have the management of the work. But the fact that their official interest is in favour of this ground being taken makes it all the more necessary that the trustees should be careful not to let those interests clash with their duties as trustees. The

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proposal to divert the land from the purposes for which it was purchased, in a manner calculated to benefit the ratepayers and property owners and not the poor of the parish, is one which requires to be jealously watched. The maintenance of open spaces in crowded districts is of paramount importance to the health of the metropolis generally; and the ground in question, if dedicated to the public as a garden and recreation ground, would be more beneficial to the inhabitants of Bethnal Green than it would be if covered by buildings, even though one of those buildings were a free library. The Public Gardens Association has requested the London County Council to use any influence it may have to preserve this ground from being built on, and to support the minority of the trustees who wish to transfer it to the Council as representing the public. If the facts are known, public opinion should certainly support this action, and protect the property of the public from appropriation by the parish officials.

BURIAL REFORM.

THE returns recently issued respecting the London cemeteries discloses a startling condition of things, especially in the Tower Hamlets Cemetery in the East, and the Brompton Cemetery in the West. In the former, in an area of seventeen acres, almost a quarter of a million are buried, and in the latter, in the centre of a vast population, 155,064 bodies are buried in an area of twenty-eight acres three roods. The number of bodies interred in twenty-one cemeteries in the suburbs of London amounts to considerably upwards of a million and a quarter, while the total area is 558 acres. It would be difficult to afford a better proof of the urgent need of a radical reform in modes of burial, both out of respect for the dead and regard for the living.

The Church of England Burial Reform Association has done good service in obtaining from the Government and bringing to the public this most important information, and is deserving of all support in its vast undertaking.

THE PUBLIC HEALTH

DURING JULY 1889.

THE mean temperature during the month of July at the Royal Observatory, Greenwich, was 61°·0; it was 0°·6 below the average July temperature in one hundred years, and with the exception of 1888 was lower than that recorded in the corresponding period of any year since 1883. An excess of temperature prevailed on eleven days during the month, while on the remaining twenty days it was below the average. The coolest day of the month was the 23rd, when the mean did not exceed 56°·4, and was 6°·4 below the average, the warmest day was the 30th, when the mean was as high as 67°·1, and showed an excess of 4°·5. Rain was measured on sixteen days during the month under notice, to the aggregate amount of 2·1 inches, which was half an inch below the average for the corresponding period in sixty-one years. During the first seven months of the current year the rainfall has amounted to 13·6 inches, which slightly exceeded the average amount in the corresponding periods of sixty-one years. The sun was above the horizon during 496·8 hours during July, but only 138·5 hours of bright sunshine were recorded at Greenwich, which was considerably below the average amount registered in the corresponding months of the ten preceding years. The wind was very variable during the first twelve days of the month, after which south-westerly winds prevailed.

In the twenty-eight large English towns dealt with by the Registrar-General in his Weekly Return, which have an estimated population of upwards of twenty-eight and a half millions of persons, 28,084 births and 18,642 deaths were registered during the five weeks ending Saturday, August 3. The annual birth-rate, which had been 31·9 and 31·1 per 1,000 in the two preceding months, further declined to 30·6 during the month under notice, and was considerably below the average rate in the corresponding periods of the seven preceding years, 1882–88. The lowest birth-rates last month in these twenty-eight towns were 23·6 in Brighton, 25·1 in Huddersfield, and 26·6 in Bradford; in the other towns the rates ranged upwards to 35·5 in Manchester, 36·4 in Sunderland and in Cardiff, 39·1 in Preston, and 40·6 in Newcastle-upon-Tyne. In London the birth-rate last month was equal to 29·5 per 1,000, while it averaged 31·6 in the twenty-seven provincial towns.

The annual death-rate in the twenty-eight towns, which had declined from 20·8 to 17·1 in the four preceding months, rose again to 20·4 during the month under notice, and was 0·6 per 1,000 above the average rate in the corresponding periods of the seven preceding years, 1882-88. The lowest rate of mortality in these towns last month was 13·6 in Brighton. The rates in the other towns, ranged in order from the lowest, were as follow:—Huddersfield, 15.6; Bristol, 15·9; Derby, 15·9; Wolverhampton, 17·3; Nottingham, 17·5; Oldham, 17·5; London, 18·2; Norwich, 19·0; Portsmouth, 19.7; Blackburn, 19·8; Halifax, 19·9; Bolton, 20·1; Bradford, 20·2; Cardiff, 20·6; Birkenhead, 20·7; Sheffield, 21·2: Birmingham, 21·3; Hull, 21·6; Plymouth, 23·6; Leicester, 23·9; Liverpool, 24·3; Salford, 25·6; Leeds, 26·1; Manchester, 26·8; Sunderland, 26·8; Newcastle-upon-Tyne, 27·8; and the highest rate during the month, 37·8 in Preston. The mean death-rate in the twenty-seven provincial towns was 22·2 per 1,000, while in London, as before stated, the rate did not exceed 18·2 per 1,000. The 18,642 deaths from all causes in the twenty-eight towns during the five weeks of July, included 2,983 from diarrhœa, 473 from measles, 388 from whooping-cough, 272 from scarlet fever, 264 from diphtheria, 172 from "fever" (principally enteric), and not one from small-pox; in all 4,552 deaths were referred to these principal zymotic diseases, equal to an annual rate of 5·0 per 1,000, which slightly exceeded the average rate in the corresponding period of the seven preceding years, 1882–88. The death-rate in London last month from the principal zymotic diseases was equal to 4·0 per 1,000, while in the twenty-seven provincial towns it averaged 5·8, and ranged from 1·5 in Wolverhampton, 2·1 in Bristol, and 2·7 in Huddersfield and in Cardiff, to 7·9 in Sunderland, 8·3 in Leicester and in Leeds, 9·4 in Salford, and 15·8 in Preston.

Diarrhœa was the most fatal zymotic disease in the twenty-eight towns during the month under notice. The rate of mortality from this disease, which had risen from 0·22 to 0·60 per 1,000 in the three preceding months, further rose to 3·26 during July, and considerably exceeded the average in the corresponding periods of the seven preceding years, 1882–88. In London the death-rate from diarrhœa was 2·77 per 1,000, while in the twenty-seven provincial towns it averaged 3·66, and was equal to 4·6 in Birmingham, 5·5 in Leeds, 5·6 in Sunderland, 6·2 in Salford, 7·7 in Leicester, and 8·3 in Preston. The rate of mortality from measles, which had declined from 0·97 to 0·68 per 1,000 in the four preceding months, further fell to 0·52 during July, and was below that recorded in the corresponding period of any year since 1882. In London the measles death-rate did not exceed 0·32 per 1,000, whereas it averaged 0·68 in the twenty-seven provincial towns, among which this disease showed the highest proportional fatality in Manchester, Leeds, Hull, Halifax, and Preston. The death-rate from whooping-cough, which had declined in the three preceding months from 0·69 to to 0·51 per 1,000, further fell to 0·42 during the month under notice, and was below the average in the corresponding periods of the seven preceding years,

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1882–88. In London the rate of mortality from this disease was 0·31 per 1,000, while in the twenty-seven provincial towns it averaged 0·52 per 1,000, and was highest in Newcastle-upon-Tyne, Sunderland, Bradford, Birkenhead, and Preston. The death-rate from scarlet fever, which had been 0·23 and 0·24 per 1,000 in the two preceding months, further rose to 0·30 during the month under notice, and exceeded that recorded in the corresponding period of any year since 1884. In London the death-rate from scarlet fever was only 0·11 per 1,000, while it averaged 0·45 in the twenty-seven provincial towns, among which this disease showed the highest proportional fatality in Blackburn, Salford, and Plymouth. The rate of mortality from diphtheria, which had been 0·19 and 0·20 per 1,000, in the two preceding months, further rose to 0·29 during July, and considerably exceeded that recorded in the corresponding period of any of the seven preceding years, 1882–88. In London the diphtheria death-rate was as high as 0·42 per 1,000, while in the twenty-seven provincial towns it averaged only 0·18, and was highest in Manchester, Salford, and Plymouth. The death-rate from "fever" (principally enteric), which had been 0·15 per 1,000 in each of the two preceding months, rose to 0·19 during the month under notice, but was slightly below the average rate in the corresponding period of the seven previous years, 1882–88. In London the rate of mortality from "fever" did not exceed 0·10 per 1,000, while it averaged 0·26 in the provincial towns, among which the highest proportional fatality of fever occurred in Salford, Preston, and Leeds. No death from small-pox was recorded during the month under notice in any of the twenty-eight large towns; and no small-pox patients were under treatment during last month in any of the Metropolitan Asylum Hospitals.

The rate of infant mortality in the twenty-eight towns, measured by the proportion of deaths under one year of age to registered births, was equal to 243 per 1,000 which considerably exceeded the average rate in the corresponding periods of the seven preceding years. In London the rate of infant mortality was 230 per 1,000, while in the twenty-seven provincial towns it averaged 253, and ranged from 131 in Brighton, 135 in Huddersfield, and 143 in Blackburn, to 306 in Leeds, 307 in Liverpool, 363 in Salford, 423 in Preston, and 432 in Leceister.

The death-rate from diseases of the respiratory organs, judged by the metropolitan returns, was below the average during July. The weekly number of deaths referred to these diseases in London averaged 157, and the death-rate was equal to 1·9 per 1,000.

The causes of 403 of the 18,642 deaths registered in the twenty-eight towns during the five weeks of August were not certified, either by registered medical practitioners or by coroners. These uncertified deaths were equal to 2·2 per cent. of the total deaths, which corresponded with the proportion in the preceding month. In London the proportion of uncertified deaths was 1·1 per cent., while in the twenty-seven provincial towns it averaged 2·9 per cent. The causes of all the deaths during last month were certified in Portsmouth and Norwich, and only one was uncertified in Wolverhampton, Leicester and Cardiff; among the other towns the largest proportions of uncertified deaths were recorded in Bristol, Sheffield, Halifax and Liverpool.

Among the population living in the outer ring of suburban districts around London, estimated at upwards of one and a quarter millions of persons, the annual death-rate from all causes during July did not exceed 13·8 per 1,000, and was considerably below the average in the corresponding periods of the seven preceding years. During the five weeks ending August 3, 188 fatal cases of diarrhœa, 38 of whooping-cough, 32 of diphtheria, 15 of "fever," 15 of measles, 12 of scarlet fever, and 1 of small-pox, were recorded in the outer ring; in all, 301 deaths resulted from the principal zymotic diseases, equal to an annual rate of 2·4 per 1,000. Compared with the preceding month the fatality of whooping-cough, diphtheria, and diarrhœa showed a marked increase, while that of measles and scarlet fever declined. Of the 188 deaths from diarrhœa, 29 occurred in West Ham, 19 in Willesden, 18 in Tottenham, and 14 in Croydon sub-districts. The 32 fatal cases of diphtheria included 9 in West Ham, 4 in Brentford, and 3 in Tottenham sub-districts; and 11 of the 38 deaths referred to whooping-cough were recorded in West Ham sub-district.

NOTIFICATION OF INFECTIOUS DISEASES

IN 41 URBAN SANITARY DISTRICTS.

THE table on page 66 contains uniform statistics relating to sickness and mortality in forty-one of the fifty-six urban sanitary districts of England and Scotland in which the notification of infectious diseases is compulsory. The population of the towns for which we are enabled to publish complete statistics for the month of July is estimated at upwards of four millions of persons. The annual rate of mortality from all causes in these towns during the month under notice averaged 18·4 per 1,000, against 19·9 and 18·3 in the two preceding months. This death-rate was 2·0 per 1,000 below the mean rate last month in twenty-eight of the largest English towns, which was 20·4 per 1,000. The rates of mortality during the month under notice were considerably below the average in Reading, Guildford, Willesden, Llanelly, Leek, West Ham, and and Accrington; while they showed an excess in Leicester, Salford, Ashton-under-Lyne, Sunderland, Manchester, Burnley, and Preston. The death-rate from the eight infectious diseases dealt with in tho table averaged 0·66 per 1,000, against 0·59 and 0·54 in the two preceding months. No deaths from any of these infectious diseases were registered during last month in Burton-on-Trent, Guildford, Jarrow, Leek, Reading, Ripon, or Stafford; whereas they caused the highest death-rates in Rotherham, West Ham, Manchester, Lancaster, Salford, and Wakefield. Scarlet fever showed the highest proportional fatality in Rotherham, Salford, Lancaster, and Wakefield; diphtheria in Salford and Greenock; enteric fever in Salford; measles in Warrington, Halifax, Aberdeen, Preston, and Burnley; whooping-cough in Birkenhead and Preston; and diarrhœa in Heywood, Nottingham, Salford, Sunderland, Leicester, and Preston. Two deaths were referred to puerperal fever in Aberdeen, 2 in Nottingham, and 2 in Salford. A fatal case of small-pox was recorded in West Ham, but not one in any of the other sanitary districts. With reference to the notified cases of infectious diseases in these towns during July, it appears that the proportion of the population reported to be suffering from one or other of the eight diseases specified in the accompanying table was equal to 5·1 per 1,000, against 4·6 and 4·4 in the two preceding months. No case of any of these diseases was reported during the month under notice in Guildford or Ripon, and while the proportion did not exceed 1·5 per 1,000 in Aberdeen, Leek, Reading, Stafford, Edinburgh, and Ashton-under-Lyne, it ranged upwards in the other towns to 7·5 in Manchester, and in West Ham, 7·6 in Burnley, 7·8 in Portsmouth, 11·3 in Salford, 14·2 in Derby, and 18·0 in Wakefield. Scarlet fever was proportionally most prevalent in Portsmouth, Oldham, Salford, West Ham, Burnley, Derby, and Wakefield; diphtheria in Preston, Willesden, and Salford; and enteric fever in Accrington, Nottingham, Portsmouth. Salford, and Preston. Four cases of small-pox were notified during the month in Sunderland and one in West Ham, and two cases of puerperal fever in Salford.

FINED FOR KEEPING DISEASED MEAT.—At Heywood, a knacker, named Fletcher, was fined £10 and costs for having on his premises, prepared as human food, the carcase of a diseased cow. Dr. Hunt stated that the cow had suffered from tuberculosis, and was totally unfit for human food.

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Table showing Sickness and Mortality in Large Towns of England and Scotland during the Month of July 1889.

Towns.	Estimated Population middle of 1889.	Small-pox. Reported Cases.	Small-pox. Deaths.	Scarlet Fever. Reported Cases.	Scarlet Fever. Deaths.	Diphtheria. Reported Cases.	Diphtheria. Deaths.	Typhus Fever. Reported Cases.	Typhus Fever. Deaths.	Enteric Fever. Reported Cases.	Enteric Fever. Deaths.	Cholera. Reported Cases.	Cholera. Deaths.	Relapsing Fever. Reported Cases.	Relapsing Fever. Deaths.	Puerperal Fever. Reported Cases.	Puerperal Fever. Deaths.	Totals of Preceding Columns. Reported Cases.	Totals of Preceding Columns. Deaths.	Annual Rate per 1,000 Persons Living. Reported Cases.	Annual Rate per 1,000 Persons Living. Deaths.	Deaths from other Zymotic Diseases. Ill-defined Fever.	Measles.	Whooping-cough.	Diarrhœa.	Total Mortality from all Causes per 1,000 Persons Living.
Aberdeen	121,448	—	—	4	—	—	—	—	—	5	1	—	—	—	—	—	2	9	2	0·9	0·2	—	29	1	5	17·5
Accrington	39,000	—	—	6	—	—	—	—	—	2	1	—	—	—	—	—	—	12	1	3·6	0·3	—	3	1	4	15·1
Ashton-under-Lyne	40,488	—	—	2	—	—	—	—	—	2	1	—	—	1	—	—	—	5	1	1·5	0·3	—	3	3	16	26·5
Barrow-in-Furness	50,000	—	—	5	1	—	—	—	—	3	1	—	—	—	—	—	—	8	2	1·9	0·5	—	6	1	14	17·7
Birkenhead	102,300	—	—	19	1	3	1	—	—	9	2	—	—	—	—	—	—	31	4	3·6	0·5	1	1	13	28	22·5
Blackburn	122,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	...	...	...	...	...	...	...	...
Blackpool	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bolton	114,670	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bradford	235,056	—	—	78	5	7	4	1	1	11	2	—	—	—	—	—	—	97	12	4·3	0·5	13	26	82	20·2
Burnley	80,000	—	—	55	3	2	—	—	—	1	1	—	—	—	—	—	—	58	4	7·6	0·5	38	1	—	27·4
Burton-on-Trent	47,493	—	—	3	—	1	—	—	—	6	—	—	—	—	—	—	—	10	—	2·5	—	—	—	13	18·4
Bury	60,359	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Chadderton	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Chester	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Croydon	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Darwen	34,500	—	—	10	1	—	—	—	—	2	1	—	—	—	—	—	—	12	2	4·2	0·7	3	2	3	17·6
Derby	98,525	—	—	99	1	—	—	—	—	8	—	—	—	—	—	—	—	107	1	14·2	0·1	1	—	21	15·2
Dewsbury	33,000	—	—	5	1	—	—	—	—	—	—	—	—	—	—	—	—	5	1	1·8	0·4	1	2	10	20·0
Dundee	163,300	—	—	22	1	3	—	5	—	10	3	—	—	—	—	—	—	40	4	2·9	0·3	—	—	8	6	15·8
Edinburgh	266,900	—	—	20	—	6	1	—	—	3	1	—	—	—	—	1	1	29	2	1·3	0·1	—	3	3	—	P
Greenock	78,248	—	—	13	1	3	4	—	—	8	1	—	—	—	—	—	—	25	7	3·3	0·9	—	—	5	16	18·4
Guildford	13,428	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	13·2
Halifax	81,200	—	—	9	—	2	1	—	—	4	1	—	—	1	—	—	—	16	2	2·6	0·3	16	—	—	—	18·5
Hartlepool	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Heywood	25,000	—	—	—	—	—	—	—	—	3	—	—	—	1	1	—	—	4	1	1·9	0·5	—	1	9	21·2
Huddersfield	92,825	—	—	43	7	2	—	—	—	—	—	—	—	—	—	2	—	45	9	5·1	1·0	—	6	9	15·5
Jarrow	31,000	—	—	3	—	1	—	—	—	1	—	—	—	—	—	—	—	5	—	1·7	—	—	3	11	23·2
Kngstn.-on-Thames	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Lancaster	27,740	—	—	12	3	—	—	—	—	1	—	—	—	—	—	—	—	13	3	5·5	1·3	—	—	2	8	19·5
Leek	13,700	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	0·9	—	—	—	—	—	14·6
Leicester	150,520	—	—	29	—	3	1	—	—	19	1	—	—	—	—	—	—	51	2	3·6	0·1	—	5	2	112	24·8
Llandudno	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Llanelly	22,828	—	—	3	1	—	—	—	—	1	—	—	—	—	—	—	—	4	1	2·1	0·5	—	—	—	2	14·4
Macclesfield	37,514	—	—	12	2	—	—	—	—	1	1	—	—	1	—	—	—	14	3	3·9	0·8	—	1	1	8	24·2
Manchester	378,800	—	—	160	15	27	10	—	—	32	10	—	—	—	—	1	—	219	36	7·5	1·2	2	33	21	110	26·8
Nelson	16,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Newcastle-on-Tyne	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Norwich	94,510	—	—	3	—	2	1	—	—	12	1	—	—	—	—	—	—	17	2	1·9	0·2	—	3	—	20	19·0
Nottingham	237,812	—	—	85	4	3	—	—	—	33	4	—	—	—	—	2	—	121	10	6·6	0·6	—	4	5	70	16·9
Oldham	142,405	—	—	76	7	2	—	—	—	2	—	—	—	—	—	—	—	80	7	5·9	0·5	1	12	25	70	17·5
Portsmouth	141,254	—	—	57	—	5	—	—	—	21	3	—	—	1	—	—	—	84	3	7·8	0·3	—	7	37	19·9
Preston	104,194	—	—	22	2	7	1	—	—	25	3	—	—	—	—	1	—	54	7	6·8	0·9	35	12	70	35·7
Reading	60,654	—	—	2	—	1	—	—	—	2	—	—	—	—	—	—	—	6	—	1·0	—	—	1	4	9	12·2
Ripon	7,670	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	P
Rotherham	36,482	—	—	—	4	—	—	—	—	—	—	—	—	—	—	—	—	(?)	4	(?)	1·1	—	6	2	—	18·3
Salford	234,283	—	—	109	21	48	12	1	1	43	11	—	—	—	—	2	2	203	47	11·3	2·6	—	7	6	119	25·8
Stafford	20,600	—	—	—	—	1	—	—	—	1	—	—	—	—	—	—	—	2	—	1·1	—	—	1	1	1	18·9
Stalybridge	27,938	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Sunderland	134,193	4	...	62	1	5	4	8	—	8	1	—	—	—	—	—	—	87	6	6·8	0·5	1	9	14	67	26·8
Torquay	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Wakefield	33,360	—	—	45	10	3	1	—	—	3	—	—	—	—	—	—	—	51	11	18·0	3·9	—	—	8	1	21·2
Warrington	48,200	—	—	16	3	—	—	—	—	5	—	—	—	—	—	—	—	21	3	5·7	0·8	—	9	2	5	23·5
West Ham	180,000	1	1	82	8	9	4	—	—	10	2	—	—	—	—	1	1	103	16	7·5	1·2	—	3	6	25	14·8
Weymouth	14,008	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Willesden	52,915	—	—	6	1	7	—	—	—	5	—	—	—	—	—	—	—	18	1	4·4	0·2	—	—	—	14	13·8
York	75,327	—	—	11	1	4	—	—	—	20	2	—	—	—	—	—	—	35	3	4·8	0·4	—	—	13	45	20·1

SPECIAL REPORTS, ABSTRACTS, &c.

THE MILK TRADE AND THE PUBLIC HEALTH.

In view of the serious outbreak of typhoid fever, due to contaminated milk, in Leeds, we publish the following extracts from a paper read by Mr. S. W. North, medical officer of health for York, at the meeting of the National Association of Sanitary Inspectors held in that city (*see* Sanitary Record, July 15, page 18):—

In these days, when science has compelled us to recognise the kinship in structure and function which exists between man and animals, and where in increasing numbers the animals we domesticate and reduce to our service have become our companions and neighbours, it seems but reasonable that we should take some cognisance of their diseases, and ask if it be not possible, or even probable, that they may convey to us some of their ailments, or that we may convey to them some of the morbid conditions which affect humanity. This to some extent has already been done; and I venture to think that in the near future it will receive far more attention than it has done in the past. It has long been known that some diseases, of which hydrophobia is an example, may be transmitted from animal to man—malignant pustule, glanders, and others. Recently some evidence has been shown that an eruptive disease on the udders of cows may give rise to scarlet fever in the consumer of the milk. Tuberculosis, however, stands in the front rank for importance. Once let it beyond all doubt be shown that tuberculosis is transmissible from animals to man and we lay hold of a cause of disease which slays its victims by thousands. Tuberculosis is known to prevail among bovine animals, and most extensively among that class which constitute the dairy cattle of our large towns. It has been proved that animals fed on tuberculous flesh speedily contract the disease. That tuberculous matter injected under the skin of a healthy animal gives rise to the disease in that animal. The ingestion of the milk of tuberculous animals seems capable of producing the disease in the animals which so use it. The milk of tuberculous cows is known to contain the specific micro-organism which Koch and others believe to be the true agent in the production of tuberculosis in both men and animals. The tuberculosis of animals is regarded as identical with that of man. The same defective hygienic conditions which favour the development of this disease in man favour its production in animals. Deficient light and air, dampness of sheds, over-crowding, imperfect ventilation, bad and insufficient food, filthy surroundings, all favour the development of tuberculosis, both in man and beast. All conditions which tend to lower the standard of health and impair nutrition increase the susceptibility to tuberculosis. These conditions we know are common enough in the surroundings of most of the milk producers, especially in large towns. The facts in support of these views are well set forth in a departmental report on pleuro-pneumonia and tuberculosis published last year.

These diseases have so important a bearing on the public health, and are so intimately associated with the milk trade, that I commend their consideration to the attention of the Society as one of special importance. In the sequel I propose to suggest the direction in which our duties and that of sanitary authorities lies in dealing with these diseases of cattle from which a large part of our food supply is derived. However important the diseases of animals may be in their influence on the general health of a community, they are by no means the only channel through which the milk trade may become a factor in the production of disease. It is well known that milk readily absorbs the emanations from things among which it may be placed; oranges, for example, and onions, readily impart their flavour to milk stored in the same closet; so milk will not keep in the presence of putrefaction of any kind, simply because it readily absorbs the putrefactive organism. Milk is a medium in which many micro-organisms flourish and multiply. In many forms of disease emanations are given off from the surface of the body or the lungs, which, diffused through the air, find a resting-place in whatever may be near, be it solid or fluid. These particles being in many instances minute organisms, or containing the germs of such, readily multiply in milk. Persons in health give off emanations which are poisonous to those who breathe them in any large quantity. These simple facts are fully realised. We see without difficulty how numerous are the conditions under which the milk trade may seriously endanger the public health, and why it needs to be regulated. Water readily absorbs and conveys these unwholesome things; water of necessity is used in the milk trade, sometimes it is said to be the chief source of profit. Unwholesome matters given off from the human body or contained in the secretions may find their way into privies, drains, or cesspits, or even on to the surface of the ground, to be redistributed in the air whenever temperature or other circumstances may lift them up. Milk may in this way become contaminated with the elements of disease, or contaminated water may be used in cleansing the vessels or in diluting the milk. The knowledge and experience of those I address will afford countless illustrations of the method by which in this way the milk trade may become an agent in the spread of disease. The observations made during the past 20 years have abundantly shown that polluted milk is a source of no small danger to the community, a danger comprehensive enough to justify the most stringent regulations. Scarlet fever, diphtheria, and typhoid fever have over and over again been proved to be distributed by the agency of milk. The diseased secretions of the sick having become mingled with the milk either by direct absorption from the surrounding air, or indirectly by its being mixed with water contaminated in some one of the many ways we know to be not only possible, but very easy. To show the danger to which the milk trade exposes the public let me briefly describe how milk is sold. No. I.—At the street corner you may see two or three milk hawkers dealing it out to one another, mixing all sorts of milk, new and old; such milk keeps badly, all trace of its origin is lost. No. II.—A bowl or other vessel stands on a table in the living-room of the seller, with children about whose fingers, not always of the cleanest, find their way into it. No. III.—The bowl or other vessel containing milk stands on a counter in the midst of vegetables and other matters, exposed to the emanations from every customer who may enter the shop. No. IV.—The milk is stored in a closet or pantry in the living-room with the remains of food cooked and uncooked, to say nothing of sundries not nice to think about. No. V.—The dairy is used as a wash-house, and the milk exposed to foul linen. No. VI.—Milk is sold by persons nursing sick children. I have seen a case of scarlet fever in the shop, and a child sick of the same disease in the arms of the person serving. No. VII.—I have seen milk kept for sale in large quantities in the living room of a small house in which there were four cases of scarlet fever. No. VIII.—I have seen milk sold by persons who were nursing bad cases of typhoid fever, such persons passing with unwashed hands from the sick room to the shop. No. IX.—With few exceptions, milk sold by small dealers is exposed to human emanations, and to the emanations from sick people. The retail dealers in milk such as I have described sell quantities from a gallon or two to twenty or thirty gallons daily. For the most part they know nothing of the premises from which it came, and at times forget of whom they have bought it. Such are the dangers to which the public health is exposed through the agency of the milk trade. What are the remedies? Nothing short of the most rigid supervision from the cow to the last distribution. No man should be allowed to produce milk for sale as human food unless his cattle and his premises are subject to careful and

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systematic inspection by competent persons. The whole of the milk-producing cattle should be seen, examined at short intervals by a skilled veterinary surgeon, diseased animals being at once removed, and the sale of their milk stopped. No man should be allowed to sell milk within the area of any sanitary authority without a special licence to do so; such licence to be granted by the authority in whose district he proposes to sell milk; such licence being withdrawn or suspended by the same authority whenever sufficient reason is shown. The premises and the cattle of every producer of milk—no matter where he lives—and of every intermediate vendor should be open to the inspection of the sanitary authority of the district in which the milk is sold. In distant places, the sanitary authority of the district in which the milk is sold should have the power to appoint local persons to inspect for them, or require a special report from the sanitary officer of the district in which the cattle or the premises on which the milk is dealt with is situated. No milk should be stored or sold on any premises which are not wholly detached from the living or sleeping rooms of the inhabitants of the house or other persons. Every producer of milk, and every vendor of milk should be bound to report to the sanitary authority of the district in which such milk is sold the occurrence of any disease among the cattle, or the persons of his household, or those engaged in the preparation or distribution of the milk. The Local Government Board or some other similar authority, should prepare regulations, showing the minimum requirements below which no local authority should be allowed to license any premises. All petty shops and similar places should be closed against the sale of milk, and none licensed except such as are properly constructed and kept. Mr. North added that he had said nothing as to the Dairy and Cowsheds' Order, because he thought it was of little use, and fell lamentably short in every important particular.

NORTH-EASTERN SANITARY INSPECTION ASSOCIATION.

THE annual general meeting of the North-Eastern Sanitary Inspection Association was held in the hall of the Literary and Philosophical Society, Westgate Road, Newcastle, Dr. SPENCE WATSON (vice-president) presiding.

The annual report was taken as read. It stated:—

The council have much pleasure in reporting that the sixth financial year, which closed on June 30, records a further advance, the members having increased from 405 to 470. This represents the nett accession to the roll after lapses have been filled up. In this connection it is well to remember that the services of the Association have been obtained in past years for 500 buildings, which are not now on the roll, and that its influence has thus extended much farther than the simple figures of the year indicate. This is the largest nett increase of members the Association has had, excepting that of the second year. Still, I regard be had to the known prevalence of demonstrably bad arrangements and defective workmanship in house sanitation, and to the fact that less than 1 per cent. of the community give heed to this subject, it is to be devoutly wished that this 1 per cent. may soon represent the careless rather than as now only the careful in sanitation.

Another feature worthy of notice in the growth of the Association is that the average fees have increased from £1 15s. per member in the first year to nearly £3 per head in the last two years. This, of course, does not imply any increase in the rate, but simply that the Association is employed on larger buildings, and more largely on supervision of works, a most satisfactory symptom of increasing care and thoroughness in sanitary work, so that here again is proof that the influence of the Association extends much farther than the simple figures of the year indicate. Many who join the Association do not deem it necessary to maintain an annual inspection of their premises, but this offers a security unattainable otherwise, and instances of the neglect, as well as of the observance, of this salutary rule during the past year have shown the importance and economy of maintaining it. The council again, therefore, urge the members not to forego this form of insurance and protection.

Drains should be thoroughly tested in sections before being covered in. If this be enforced for a generation, we will then have workmen who will understand that they must make tight joints, whether they understand the necessity for such or not. Clay jointing of drains is still largely practised, which shows that others, besides workmen, have something yet to learn. They might learn it quickly and thoroughly by uncovering a few drains, jointed with clay, which have been in use for a few months. The connection of metal and earthenware, *e.g.*, soil pipe to drain, is another weak point everywhere, in new as in old work, and a very dangerous one. Even when properly made, it is especially liable to fracture by subsidence in new buildings, and periodical testing in such cases is essential to safety.

Novocastrians may be very heartily congratulated on the near prospect of having the electric light placed within their reach. Apart from the cost of installation, it is said that the cost of the light will exceed that of gas light of similar power by 25 to 50 per cent. only. To demur to this "only," authorities of buildings must shut their eyes to the gain by purity in electricity—to the loss by filth in gas—to the gain in health and substance by better air—which, like the loss by air fouled by the products of gas lighting, is too great to be easily calculated. As a factor in the problem of ventilation, the substitution of electricity for gas lighting cannot be too strongly recommended. Building authorities, warehousemen, and shopkeepers in Newcastle should promptly move in this matter for their own sakes.

The Exhibition of Sanitary Appliances continues to prove useful and attractive. It was fitted up at considerable outlay by the Association, as well as by the exhibitors, and is open daily, free to the public, to whom it has proved of great value, and they have shown their appreciation of it by repeated visits. To see the best appliances in each department properly fitted, and to have any explanation desired freely given, where there is nothing on sale, are advantages that must be the better appreciated the more widely they are known. So far as known, there is no better permanent collection in the kingdom.

The SECRETARY (Mr. R. B. Duncan) stated that the Association began the year with a balance of £468, and at the close of the year there was a balance of £674, an increase of over £200, and that increase had taken place in spite of increased expenditure.

The CHAIRMAN, in moving the adoption of the reports, said it was interesting to see how the Association had grown. They had 64 more members than they had at the beginning of last year, and they had the balance increased by over £200. Some gentlemen had asked him what they were working for in regard to the balance. It should be clearly understood that they were not, in any sense, trading. They could not make profits. There was no inducement to make profits, because they could not divide them if they did. For the reason that they were a voluntary society, and that they therefore had no one to fall back upon in case of emergency, it was only fair to their officials, who gave them their skill and time, that they should accumulate such a reserve fund as would make their salaries perfectly secure. That was their only object in having a balance—to give stability to the Association. It was curious how many people they met who were quite ignorant of the kind of work they carried on, and ignorant also of the whole of the methods and the whole of the need of the work they aimed at. With regard to the subject of ventilation, they were, of course, aware that alterations in old buildings for proper ventilation involved great expense. But he understood that, if when they were building their dwelling houses and institutions the question of ventilation was considered from the very first, the cost would be reduced to a minimum.

Dr. PHILIPSON seconded the resolution, and said he had seen many good results of the work of the Association. Since the Association had taken the question of sanitation up, the public had greatly benefited, through many of their institutions, in consequence of the action of the Association. He spoke more especially of the Royal Infirmary. Attention was forcibly drawn to some imperfections there, and, since the House Committee undertook the correction of those imperfections, the institution had been in a better state. He could speak of similar improvements which had been made in other charitable institutions he was connected with. He felt that, in considering the action of that Association during the past six years it had been in existence, there was great reason for satisfaction, and he hoped that in the future they would have a steady increase in the number of members, and also a more ready appreciation of the services rendered by the Association to the community at large.

The resolution was carried unanimously.

It was resolved to print a large number of copies of the annual report, on which high encomiums were passed

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by several gentlemen present, and circulate them throughout the district.

On the motion of Mr. W. D. Stephens, seconded by Mr. A. S. Stevenson, the officials for the year were elected.

THE SANITARY ASSOCIATION OF SCOTLAND.

(From our own Correspondent.)

The fifteenth annual conference of the Sanitary Association of Scotland was held at Inverness on July 11 and 12. There were a large number of members present from various parts of Scotland, consisting of sanitary inspectors, medical officers of health, and representatives of local authorities.

Dr. Cameron, M.P. for Glasgow, was elected president for ensuing year, and Mr. Peter Fyfe, Glasgow, and Mr. K. Cameron, Aberdeen, vice-presidents. Mr. James C. Stobo. Rutherglen, was appointed secretary in room of Mr. George MacKay, Govan, who has held the office for three years, and who was awarded a vote of thanks for the efficient manner in which he had carried out the duties devolving upon him.

Dr. McVail, Kilmarnock, the president, moved that a committee be appointed for the purpose of carrying out periodical examinations in sanitary science with a view to granting on behalf of the Association certificates of competency for the office of sanitary inspectors. This was unanimously agreed to and the following committee elected:—Dr. McVail, Kilmarnock; Professor Duncan, Glasgow; Messrs. George MacKay, Govan; Kenneth Cameron, Aberdeen; George A. D. MacKay, Edinburgh. Mr. J. C. Stobo. Rutherglen, was appointed secretary to the committee.

This concluded the business portion of the conference, after which Sir Henry Macandrew, Provost of Inverness, welcomed the Association to the ancient capital of the North Highlands. He pointed out that Inverness had many advantages in the matter of situation. It had a magnificent river flowing through it, which their ancestors turned into a sewer, but which they were now endeavouring to purify. They were endeavouring to have the river of the freshest water, so that it would allow the salmon to go from the sea to the higher reaches, and they had, he was glad to say, been very successful in that respect already. On the west side of the river they had erected a large sewer, and they were now discussing the proposal to construct a new sewer on the east side and thus take away the sewerage out of the river.

The President proposed a vote of thanks to Sir Henry Macandrew for opening their proceedings. One of the principles of their Association had a missionary character about it. They belonged to a school of philosophers known as peripatetic, who went from town to town, leaving a little knowledge here and there on the subjects in which they were interested, and it helped them a great deal in their deliberations to obtain a formal reception from the authorities of the places which they visited. What was wanted for sanitary officials was security of tenure. They should be subject to dismission only through the Board of Supervision or the Secretary for Scotland. (This provision has since been secured in the Local Government Bill.) In England there was connected with the Local Government Board a medical department consisting of a medical officer, assistant officers, and a staff of medical inspectors. In Scotland, while the Board of Supervision obtained part of the valuable services of Dr. Littlejohn, there was no such medical department, and no such assistance to local authorities, and as legislation in regard to local government was at present in hand they should not miss the opportunity of introducing a system which was no new experiment, but was simply essential to the public health of Scotland.

The following papers were then read:—Mr. John Paterson, C.E., Inverness, on "Town Sewerage"; Dr. A. Simpson, Perth, on "Some Causes of Preventible Disease"; Mr. Kenneth Cameron, sanitary inspector, Aberdeen, on "Remarks on the Public Health Clauses of the Local Government Bill for Scotland"; Dr. T. G. Nasmyth, Cowdenbeath, on "Contagia and Disease"; Mr. John Welsh, sanitary inspector, "On Perth in 1858 and Perth in 1888"; Councillor Maconachie, Aberdeen, on "The Sanitary Officer and His Work as it appears to a Layman"; Andrew C. Black, sanitary engineer, Inverness, on "The Drainage and Sanitary Appliances of Dwellings, &c."; Dr. Ogilvie Grant, medical officer of health, Inverness, on "Health of Inverness"; Professor McFadyean, Edinburgh, on "Tuberculosis of the Domesticated Animals: its Relationship to Human Phthisis"; and John Macdonald, sanitary inspector, Hawick, on "The Hawick Sewerage Purification Work, and its Effect on the Death-Rate." Whilst all the papers were of an interesting and valuable nature, the two that caused most discussion were those on "The Disposal of Town Sewage" and "Tuberculosis of the Domesticated Animals."

It may be mentioned that Inverness was recently subjected to an epidemic of typhus fever, and that the medical officer, Dr. Grant, and sanitary inspector, Mr. Macdonald, caught the disease in the execution of their duty, but have now recovered.

An interesting display of drainage and sanitary appliances was made in an adjoining hall by Messrs. Robert Black & Son, plumbers and sanitary engineers, Inverness, who also provided the members with a printed catalogue of the collection.

HYGIENE AT THE PARIS EXHIBITION.

For the past four months Paris has been inundated with visitors from all parts of the world to view its great show, but comparatively few appear to interest themselves much in the very important section of Hygiene, specially important to the French. The French are at length beginning to realise their backward state in regard to sanitation and drainage, and one of the most noticeable features in the whole exhibition is their progress in this direction since the exhibition of 1878. The hygienic section is not confined to one particular spot in the exhibition, but is dotted about in various directions, part being on the Esplanade des Invalides, part on the Champ de Mars, and part in the magnificent Machine Gallery. The pavilion on the Esplanade des Invalides, with its important annexes, contains the most important exhibits.

The first annex we enter upon coming out of the artillery section is devoted entirely to the apparatuses and drawings of the well-known firm, Geneste, Herscher & Co., in reference to the ventilation and warming of all sorts of public and private buildings. such as hospitals, asylums, theatres, schools, gymnasiums, prisons, laboratories, &c.; and in reference to disinfection, flushing, and drainage. An interesting diagram is seen showing the means by which the new Sorbonne is ventilated. Blue arrows show us the impure air ascending, white arrows the pure, fresh air sent over the building by means of their wonderful compact machine; and pink arrows the pure, warmed air for cold days dispersed over the building by means of the same machine which supplies the cold, pure air. This is accomplished entirely by mechanical insufflation, and is now in use at the Hôtel de Ville, the Théatre Génève, the Théatre de Nice, and the Ecole Centrale. Unfortunately, as with the majority of the exhibits in the entire exhibition, there are no explanations, written or verbal, to be obtained by the visitors, so that unless they are quite *au fait* with the innumerable exhibits of all sorts and kinds from all parts of the globe, much of the exhibition loses its value and becomes uninteresting. People do not care to walk through galleries of machinery, filters, models of sewers, and so forth, without knowing what is their speciality, or how they tend to mark progress, each in their special department.

Exhibit of Geneste, Herscher & Co.

In addition to the new ventilation machines of Geneste. Herscher & Co., there are several exhibits of machines

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for disinfecting, which, in France, is more generally accomplished with damp heat instead of dry heat. Elaborate experiments have been made in order to effectually destroy the microbes of disease between blankets, which is the most difficult part of disinfection, and by means of the new disinfecting machine of Geneste, Herscher & Co., this difficulty has almost been overcome. In this same annex, visitors to Nice will be glad to hear of the exhibit of a new method for flushing, by means of an automatic machine which is being speedily adopted all over Nice. It is always a source of regret that so many of the beautiful towns on the Continent are rendered unhealthy and dangerous by solely the want of progress in sanitation. Paris is still far from perfect in sanitary matters, so is Marseilles, and many another town in France.

Facing the annex of Geneste, Herscher & Co., is the pavilion of hygiene and "public assistance." Here we find a complete history of the bringing up of children from the times of the Greeks and Romans to the present day. All departments send specimens of the cradles they use, and many send models of *crèches*. Then there are models of hospitals and dispensaries. One of the best of these is Ruel's model of a gratuitous dispensary for children, which, if a faithful representation, would give no one cause for complaint. The model shows us the pharmacy, the doctor's room, the bedrooms, the bath-rooms, the dining-rooms, and the waiting-room for the little invalids. Turning from these models we observe exhibits illustrating the rearing and education of the blind, deaf, and dumb, which is in the main similar to our own.

Department of Hygiene and Assistance Publique.

The Red Cross Association of the Women of France is an interesting exhibit, showing how the women of France have come to the fore in ambulance work and sick-nursing. Since its foundation in 1881 the Association has made rapid strides in spreading the knowledge of matters pertaining to health, and more than 1,500 people have attended their courses, and over 150 have gained the diploma.

From this good work we turn to all the latest improvements in reference to chairs for invalids, and for operations, and of these perhaps the most notable exhibits are those of Dupont. Dupont exhibits a wonderful bed for raising or lowering a patient, or transferring the patient from the bed to a chair without the slightest fatigue or discomfort to the patient. The great charm of the system lies in the fact that it can be adapted to any bed.

Dupont's exhibit.

The first thing which strikes the eye when passing on from these exhibits is an enormous glass globe, which at first sight may make visitors wonder what it has to do with hygiene. Glass-blowing until recently has been attended with much danger to the men engaged in the trade, but now that it is accomplished by means of bellows, it has ceased to be the noxious trade of former days, and with the good result that the glass can be blown out to a far larger size. Next to this exhibit we observe a new kind of glass, which is now coming into use for lavatories, laboratories, and dissecting-rooms, its great value being that it can easily be cleaned, and that it is strong.

Doulton's have a large exhibit in this room of all their excellent and necessary sanitary appliances. Fortunately they have been entrusted with nearly all the water-closet and lavatory arrangements in the exhibition; but although this is the case, many of them are not in a sweet and sanitary condition, because visitors will flock to two or three particular ones at Porte Rapp, and by the Tour Eiffel, so that it is almost impossible to keep them as they should be kept. Messrs. Doulton & Co. have published a little map showing exactly where all the lavatories are situated, so that in the interests of the comfort and enjoyment of visitors everyone would do well to study the map and avoid the lavatories already mentioned by going to the side aisles. Many of the French makers of drains, siphons, lavatories, &c., are adopting similar materials and modes of construction to the English. This is specially noticeable with one or two firms, whilst others are remarkable for their old-fashioned and insanitary appliances.

Doulton's exhibit.

Filicoteaux has good exhibits in regard to lavatories, although some of the minor details are not quite correct Rogier and Mothes have the best exhibits in reference to modern-day improvements.

Before quitting the room, containing the lavatory exhibits, we must refer to the important diagram exhibited by the Chocolat Lombart Company, illustrating the mode of ventilating and cooling the chocolate when in process of manufacture, thereby rendering it of the purest character. The fresh air is pumped in through a large chimney with enormous force, so that it rushes into the baking room to cool the blocks of chocolate as they are drawn out of the oven. Next to this diagram we behold the papers relating to the society against the abuse of tobacco, who show that since their existence in 1876 there has been a diminution in the sale of tobacco to the amount of 8,160,922 francs. They state that there has been a development in the present century with regard to tobacco-smoking which is serious from the hygienic and moral point of view. It goes without saying that they have many ardent enemies, but, in spite of them, they have managed to meet with a fair amount of success.

We now come to the important question of filtration, and although the Parisians can boast of some of the best kinds of filters, there is still an indolence or an ignorance in many a French household as to the necessity of having water filtered. One of the best systems to be seen for filtering is that of M. Chamberland, which although a very slow system, does not allow a single microbe to pass through. Until recently all the filters employed in the filtration of various liquids merely clarified them, retaining the microbes in suspension. M. Chamberland's new filter is said to be the only one which can destroy the most impure germs or microbes contained in liquids. It consists of a polished porcelain tube, closed at one end, and having at the other an enamelled ring pierced with a hole for the water to trickle through. This filtering tube is placed within a metallic tube, which is filled with a valve for the water to pass through. A screw which one presses with the hand hermetically seals, with the assistance of a caoutchouc ring placed on the enamelled ring, the space between the metallic tube and the filtering tube. When the valve is opened, the water occupies the closed space, and being exposed to pressure filters slowly through the porcelain. About 50 litres of water are filtered by this process in 24 hours. The cleaning of the filter is very simple. The filtration of the water taking place from the exterior to the interior of the tube, the exterior surface is alone contaminated. It is only necessary, therefore, to take out the tube and cleanse it thoroughly with with a brush. The tube, too, consisting entirely of porcelain, it can be placed in boiling water to destroy the microbes which cling to it or heated in a flame of gas or in an ordinary stove. Organic matters, from which innumerable virulent and contagious diseases arise, are by these means completely destroyed, and the tube regains its original porosity, so that the same tube can be used a great number of times. To see a glass of the Seine water prior to filtration, and to see it after passing through this filter is worthy of everybody's attention. Other firms have copied M. Chamberland's system with minor differences, but his is, as far as we have seen, the most complete and perfect. In hospitals, barracks, and schools where a large quantitly of filtered water is necessary, a large filter with some ten tubes is used, and the process is then rather different. The tubes are placed in a reservoir of galvanised iron, furnished with a water-gauge. The filtering tube is of tin, and is provided with a stop-cock at its lower end.

Filters.

Next to the filters we see some of the newest stoves valuable from a health point of view. The Cadé stove

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Stoves. with an open hearth and quick combustion is one of the best of these. The greatest calorific effects are produced by direct radiation, without any intervention of brass, sheet-iron, glass, or mica. The heat is emitted like that from the sun's rays, under conditions most suitable for health. This stove, working by quick combustion, does not produce carbon di-oxide. Its combustion gives, per kilogramme of burnt coal, three times as much heat as by slow combustion. It considerably warms the chimneys right throughout, and causes a draught. The stove being essentially smoke-consuming, the gases are completely burned, so that there is no dirt or smell, whilst there is a constant flow of fresh air, which purifies instead of vitiates the room. It is at the same time an economical stove.

In the pavilion of the Ville de Paris we find a history of the system of sewers and drainage. From statistical tables we learn that there are still 64,707 houses drained in the old style, 33,000 according to our own system, and 17,776 according to a slight improvement on the old mode. By degrees the sanitary authorities are prevailing upon the landlords to adopt the new system and get rid of their fever traps, but it is a work of time. The marvel is that Paris has been as healthy as it has with such an unhealthy system of drainage. The best sewers are those which are egg-shaped at the bottom, so as to be able to be thoroughly cleansed, and the worst kind are those which are flat-bottomed. A flat-bottomed sewer a short time ago was built at Nice, with the result that it can never be thoroughly flushed.

Sewerage and drainage.

The Parisians obtain their water from three rivers, the Ourcq, Vanne, and Seine; and of these the latter is the most impure. Each *arrondissement* of Paris is supplied in turn with the Seine water for about fifteen or twenty days; and as notice is generally given of this, it rests with the inhabitants to be very particular as to the filtration and purification of their supply.

Water supply.

All householders should visit the sanitary and insanitary house, and observe how revolting is the system adopted in the insanitary one. All the noxious gases from the sewers are free to pass straight away up the house, whereas in the sanitary house this is rendered impossible by means of extra pipes with valves, and bent at such an angle that it is impossible for the gases to find their way into the house.

(To be continued.)

THE LONDON COUNTY COUNCIL.

At the meeting held on July 30. Mr. W. Saunders opposed the expenditure of £61,000 towards the sum required for the purchase of Brockwell Park, and moved, as an amendment, that the report of the Finance Committee be referred back with a view to the item being expunged from the report. There was no pretence for saying that over-crowding prevailed. On three sides the park was surrounded, for a distance of perhaps two miles, with villas standing, upon an average, on half an acre of land. He could hardly conceive of a less useful employment of public money than devoting £61,000 to the purchase of this park.

Mr. Beck seconded the amendment, and said that the districts in the neighbourhood of Brockwell Park were capable of subscribing a substantial amount towards the acquirement of this property.

Colonel Rotton thought £61,000 was much too large a sum for the County Council to pay for the purchase of this park, only £25,000 having been voted for Clissold Park, the acreage of which was similar.

The amendment was negatived.

Other amendments, framed with a view to reducing the amount to be paid by the County Council, were also lost.

The Chairman (the Earl of Rosebery) said he wished to say a few words, particularly with a view to enforcing the obligations of economy resting upon the County Council. The acquirement of open spaces was no doubt a great boon to London, but he did not think that in every case the County Council should contribute one half. He thought it was absurd to suppose that if the Council had determined to contribute only £50,000 the balance of the money would not have been found. He regarded the proposal to contribute one half of the cost of Brockwell Park as a dismal precedent. As regarded this particular instance, he of course regarded the matter as done with. He thought that the Council, having, perhaps, with haste held out that they would pay £61,000, they were bound by honourable and laudable considerations not to recede from it. For that reason he thought the Council might put this particular vote on a separate footing. What he wanted the Council to do was this—not to look back or to grumble because it had given a very large contribution to a particular expense, not to consider the £11,000 which might have been saved to the ratepayers with a little more circumspection; what he wanted mainly to do was to put on record that the precedent of giving half of the cost of those open spaces was not to be considered a binding one. For instance, a splendid open space had been acquired in Clissold Park for £95,000, towards which the Council gave only £25,000. If the Council were always expected to give one half he trembled for the future of the Budget. He therefore hoped the Council would not object to putting some record on their minutes that there were exceptional circumstances in connection with Brockwell Park which made them decline to consider it as a precedent.

The Vice-Chairman (Sir John Lubbock) moved a resolution in accordance with the suggestion of the Chairman—namely, that the payment by the Council of one half of the cost of Brockwell Park was not to be considered as a precedent.

M. H. Marks seconded the motion, and it was unanimously adopted.

THE STAFFORDSHIRE COUNTY COUNCIL.

The Sanitary Committee of this Council have reported that they have come to the conclusion that it was premature to recommend to the Council the permanent appointment of a medical officer of health for the whole county. Certain duties were, however, imposed upon the Council that must be carried out, and they felt that in this direction certain technical knowledge was requisite to guide them in the discharge of their duties; and after giving the matter their best consideration they had come to the conclusion that as a temporary measure it would be better simply to appoint a medical officer to whom could be submitted the reports from time to time received from the other medical officers throughout the county, and whose duty it would be to report to the committee on any matter calling for comment in the reports as received. The committee suggested that a medical officer of health be appointed, and that a retaining fee of thirty guineas should be paid for his services to November 1, and that in addition he should be paid such reasonable sums as might be arranged by the committee for any journeys he might necessarily take by their direction in order to discharge the duties devolving upon them. Dr. George Reid, of Stafford, who had had ten years' experience in sanitary work, had been selected for the post.

Mr. W. G. Bagnall, in moving the report of the committee, said, the Council had powers to appoint a medical officer restrained from private practice. This would mean a very great additional expense unless the various authorities mutually agreed to adopt the county officer as their medical officer. The system, he believed, had worked well and economically in an adjoining county. But the committee did not feel prepared to ask the Council to entertain such a very great change, at all events at the present moment. There were now 51 medical officers (34 urban and 17 rural) in the county, with

salaries amounting in the aggregate to £2,600, and each of these officers had to send in copies of his report to the County Council. The authorities might, if they wished, ask for the remission of half of the salary paid to the medical officer, but if so the terms of payment were in the hands of the Local Government Board. Generally speaking the urban authorities proved to be independent of the Local Government Board. But if in the opinion of the Council the sanitary work was not done well, the Council had the right to suggest to the Local Government Board not to pay the half of the salary, or in cases where the half salary was not paid, to point out the shortcomings. The committee felt it was necessary to have some expert to advise them on the various reports, and if necessary to make journeys on their behalf. Of course the officer would not be restrained from private practice. The powers and duties placed on the Council were certain to increase, and probably next year the Council might stand in the position now occupied by the Local Government Board, and that made it all the more necessary that they should work up their ground and have the advice of an expert now. From communications that had been received it would seem that many people thought the Council should interfere in the case of every badly constructed drain or evil-smelling ditch in the county. But the committee did not wish to interfere unnecessarily with the local authorities. They wished to work cordially with them, and he believed that if the Council were to be the governing body the local authorities would much prefer to deal with representatives elected by the county rather than with the officers of the Local Government Board. The Sale of Food and Drugs Act and Margarine Act were being well carried out in the county. The question of river pollution at Leek was under consideration. If there was serious pollution he hoped the Leek authorities would so remedy it that the report of the committee would be of a pleasant and satisfactory character. The committee had not had time to deal with the question raised by the Worcestershire County Council, as to concerted action regarding pollution of the Severn.

The report was agreed to.

DRAINAGE AND SANITARY WORKS CARRIED OUT AT No. 5, QUEEN'S GATE, HYDE PARK, S.W.

At the invitation of Dr. Thomas Wakley, proprietor of the *Lancet*, a large number of gentlemen of the medical profession and others interested in sanitation were recently at that gentleman's residence, 5, Queen's Gate, Hyde Park, to inspect a new system of drainage, particularly adapted to terrace houses, before being "closed in." Among those attending were Dr. Buchanan, of the Local Government Board, Sir T. Spencer Wells, Dr. Balfour, Mr. Bernard Holt, Dr. Tripe, and Sir Charles Hare. The drainage and sanitary arrangements having on examination been found unsatisfactory and not in accordance with modern requirements, a new system has been prepared applicable to the ordinary terrace houses of London. The whole of the existing earthenware pipes and sanitary fittings have been removed, and cast-iron socketed water main pipes in 9 feet lengths, coated with Dr. Angus Smith's solution, have been substituted. By this plan the number of joints is very much reduced. The main drain pipe is 5 inches in diameter, the branch pipes are 4 inches in diameter; the joints are caulked with blue molten lead, the same as to water mains. All pipes are laid on a bed of cement concrete. The soil pipes go direct into the drains; all rain water, waste, and other pipes are discharged over Doulton's trapped surface gulleys.

A novel proceeding is to provide the house drain at the sewer end with a Phillips No. 2, pattern 6″, intercepting trap, built into the side of a ventilated chamber lined with white glazed bricks, at the bottom of which the drains are carried through on glazed channels. There is a similar manhole in a small area at the farther end of the drain, and an intermediate ditto where the soil and other pipes in the centre of the house join the main house drain. It being found necessary to lay this drain in a straight line along the basement passage, two of the manholes had to be inside the house; special and novel precautions therefore have been taken to prevent any foul air from escaping. With this object in view, Broad's air-tight manhole covers in stone frames are first fixed in the manholes, then seven inches of prepared silver sand and charcoal pressed down, and over these are fixed Phillip's Brontes patent cast-iron air-tight frames and flaps. Thus three precautions are employed against the escape of sewer gas. At the end of the drain a 15-gallon Adam's patent combined grease trap and automatic flushing tank is provided, so that the drain is flushed every time it is filled with washing-up water from the kitchen sink. This is a novel and altogether excellent arrangement. The w.c.'s are Dent and Hellyer's "Optimus" closets with water services from cisterns distinct from the water supply to house; each closet has a ventilating pipe immediately over the Dent and Hellyer's traps, and also an additional ventilating pipe to the connector of the closet itself. The soil pipe is carried above the roof, and is open at the top. The water pipes are laid on to the fire main, thus ensuring a constant high-pressure supply of water. Every cistern, sink, w.c., bath, and wash-hand basin is provided with a lead safe with outlet pipe to outside of house having separate stop valve, in addition to the ordinary taps, both to the hot water circulation and the cold water supply. Indeed, accessory stop-cocks have been put to every pipe throughout, so that any pipe or cock can be shut off, should an accident occur, without interfering with the general arrangement. The cisterns are supplied with filters from the London Water Purifying Company, Strand. In the decoration of the halls, staircases, and reception rooms special attention has been given to the use of non-poisonous materials, and among other wall and ceiling coverings are Anaglypta, Lincrusta, Japanese, and other pressed papers, which have been used so that they can be readily washed and cleansed. The floors of reception rooms will be laid with parquet flooring and the passages with stone and mosaic pavement, all with the same object. Ashton and Green's slow combustion stoves are used in the fireplaces.

The house is being fitted with electric lighting, power being supplied by the Kensington Court Company, fitted by Laing, Wharton & Down, under the direction of Mr. Rant. The hot water and stove and range work are being fixed by Messrs. Ashton & Green, Limited; the mosaic work, by De Grelle, Houdret & Co.; the painted windows, by Mr. Arthur J. Dix; the parquet flooring, by Messrs. Bassant. The contractor for the whole of the works, alterations, repairs, decorations, &c., is Mr. Herbert Hanks.

The whole has been planned and is being carried out under the direction of the architect, Mr. Rowland Plumbe, F.R.I.B.A.

SANITARY MATTERS IN GLASGOW.

(From Our Own Correspondent.)

New system of disinfecting clothing.

The system hitherto employed by the Glasgow sanitary department for the treatment of infected bed and body clothing was to wash it in soft soap and soda. Hair and feather beds, mattresses and pillows only were subjected to steam at a high pressure, it having been found that steam fixed indelibly all blood or medicine stains, &c., and was unsuited to the disinfection of blankets, sheeting, or general clothing. There was, therefore, considerable risk to the washerwomen and other workers handling the clothing. During the past 20 years 14 of that staff caught typhus, of whom 10 died and 4 recovered. To reduce these risks as far as possible to a minimum, and to be able to disinfect thoroughly certain articles of

household use that could not be washed, Mr. Fyfe, Chief Sanitary Inspector, carried out several experiments with bichloride of mercury. He found that this chemical applied in solution with water in the proportion of 1 in 5,000 acted as an efficient disinfector, while it in no way injured the colours or texture of ribbons of various hues and qualities subjected to immersion in the solution for several days. It may be mentioned that during the past year no less than 396,231 articles of clothing (exclusive of beds, pillows, carpets, &c.) were taken away, washed, dried, and in almost every case delivered to the owners the same day as received. To overtake this new system in addition to the ordinary washing and drying process, Mr. Fyfe has had constructed at the wash-house a 6-in. hydraulic press. It is situated in the receiving room, which is adjacent to, and in connection with the ticketing room. In connection with the press are two cast-iron bogies, which run on cast-iron rails. The clothes as they come in by the vans in bundles are put into these bogies, one of which is used for white articles and the other for coloured articles. The bundles are next saturated with this solution of bichloride of mercury from a cast-iron tank above the press, holding 600 gallons, and made up of a strength of 2 oz. to 60 gallons. The preparing of the solution is done in an oak tub by a spindle driven from the shafting on a bevelled wheel, and supplied with two brass revolving stirrers inside the tub. A 2-in. centrifugal pump forces the solution to the cast-iron tank before mentioned. This pump is driven by a pulley at the rate of 1,800 revolutions per minute. The bogie with its contents is run under the press which is applied by a 1-in. hydraulic pump to a pressure of 6 tons to 1 sq. foot. The clothing is thoroughly saturated by the liquid which is run off by waste pipe to the drain. The bogie is then run on the rails to the ticketing room, and its contents distributed amongst the washerwomen, the other bogie being put in its place.

I was present the other day and saw the process in operation. The saturation and pressing of a bogie load occupied only a few minutes. The total cost of fitting up the apartments with the apparatus is about £300.

The city of Glasgow has long been waiting for additional sanitary powers, which are urgently required. A Police Bill was brought forward in 1882, containing nearly all the powers now sought for, but at the request of the then Lord Advocate was not proceeded with, on an assurance given by him that he would bring in a Bill dealing with the whole subject in the following session of Parliament. The Burgh Police and Health (Scotland) Bill would, with certain amendments, have met the case, but although its provisions lately passed both Houses of Parliament, the Government also allowed it to drop. The Health Committee have, in consequence, recommended that a Bill containing powers to enforce the following clauses should be drawn up by the medical officer and clerk, and the necessary steps taken for promoting it as a private bill in next session of Parliament:—

New sanitary powers for Glasgow.

(1.) Compulsory notification of infectious diseases. Including definition of infectious diseases to be reported and powers to extend said definition from time to time.

(2.) Compulsory powers to remove healthy persons from over-crowded houses where infectious disease exists to reception house.

(3.) Power to provide hospitals, washing, and disinfecting establishments and reception houses *outwith* the city.

(4.) Power to require owner or occupier to whitewash and clean inside of dwelling houses so filthy as to be injurious to health.

(5.) Power to require occupier to cleanse bedding or clothing so filthy as to be injurious to health.

(6.) Forbidding wakes over bodies of persons dead of infectious disease.

(7.) Preventing bodies of persons dying of infectious disease in hospital being removed, except for the purpose of immediate interment.

(8.) Body of person who has died of infectious disease not to be removed by railway, steamer, or other public conveyance without certificate of medical officer.

(9.) Parents or guardians not to permit child suffering from infectious disease, or residing in an infected house, to attend school until certificate has been granted.

(10.) Teachers not to permit attendance of children in contravention of previous clause.

(11.) Penalty on use of common washing-houses for the washing of infected bedding, clothing, &c.

(12.) Water for dietetic purposes not to be supplied from cisterns exposed to contamination.

(13.) Proprietors to permit the application of the smoke test to drains and soil pipes where reasonable grounds to believe them to be defective.

(14.) Milk dealers to furnish list of customers and divulge source of the milk which they sell, when it is suspected that disease is being spread thereby.

(15.) Power to prohibit sale of milk in such cases, whether distributed from place within or without the city.

(16.) Read section 26 of the Public Health (Scotland) Act 1867 as if it included *milk*.

(17.) Define "common lodging-house" as including any place where emigrants are lodged and all boarding-houses for seamen, irrespective of the rate charged for lodging or boarding.

(18.) Adopt definition of "house" given in English and Irish Public Acts so as to include schools, factories, and workshops.

(19.) Power to make bye-laws for the regulation of cemeteries.

(20.) Raise the standard of space in ticketed houses from 150 and 300 to 200 and 400 cubic feet.

(21.) Make it necessary to apply to Dean of Guild Court with plans for permission to alter houses so as to increase the number of occupancies, or to make buildings not previously used as dwelling-houses into dwelling-houses.

(22.) Adopt section 206 of Edinburgh Police Act as to closing houses unfit for human habitation.

(23.) Amend 268 of Glasgow Police Act so as to include sale of any article of human food, drink, or consumption which has been exposed to infection from any infectious disease.

(24.) Power to make bye-laws for the cleansing of common stairs, sinks, and water-closets by tenants in rotation, so as to place responsibility upon certain individual for certain time.

(25.) Power to proceed against original seller or consignee of diseased meat to person convicted of having for sale, or selling as human food, any diseased carcase or part of a carcase, as if he were an offender art and part with convicted person, whether within or without the city.

The annual report for the year ending May 31, 1889, has just been published. The revenue amounted to £25,983, and the expenditure to £65,385, showing the nett cost of the operations to be £39,452, which, divided over the full assessable rental of the city (£3,370,736) is equal to 2¾d. per £1. The daily average of men employed is 799, and the horses number 180. On an average 713 tons of material were carted each working day, or altogether 223,029 tons 19 cwts.; but, in addition, 55,605 loads or 17,181,945 gallons of water were spread over the streets and roads. The building of the new refuse works of the department (the third in the city) situated at Kelvinhaugh, in the West End, has begun.

Cleansing department of Glasgow.

SANITARY MATTERS IN DUBLIN.

(From our own Correspondent.)

THE fresh outbreak of enteric fever in these barracks has at length determined their evacuation, and the troops have been transferred from them to tents in Phœnix Park. The outbreak is confined to Royal Square, from which 15 cases have

Royal Barracks.

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been admitted to hospital. Royal Square is the central block of buildings in the barracks; it is shut in on all sides except the southern by high buildings, is bounded on the east and west by narrow filthy lanes, and its occupants "cannot ever be expected to be healthy until these insanitary conditions are mitigated." So wrote Sir C. Cameron and Dr. Grimshaw in their report dated November 23, 1887. They recommended the demolition of the entire eastern side of the square, and the removal of the buildings on the northern and western sides. We have constantly urged Government to carry out the recommendations of their Commissioners, and either demolish these structures or confine their use to storage purposes, and now at a period very much later than the eleventh hour they have done what should have been done last year, viz., evacuated the barracks and resolved to use the Royal Square buildings as ordnance stores.

Sanitary law.

At the Quarter Sessions in Kingstown (a well-known suburb of Dublin), an action was brought before the Recorder by the Misses Galway against their landlord for £50, under the following circumstances:—The plaintiffs were tenants under a lease made in 1871, under which they were bound to keep the premises in good tenantable order and repair. In fitting up a bath recently they discovered that the drains ware choked. A sanitary engineer (Mr. W. Kaye Parry) was called in and made certain recommendations which the landlord agreed to carry out at a cost of £70. Some delay in carrying ont the works having occurred, and illness having broken out in the house, the plaintiffs left it and stayed at a hotel for one week, and in lodgings for another, and sued the defendants for the expense consequent thereon. The Recorder in deciding the case said there was no law to entitle a tenant, without having obtained any order under the Sanitary Act, to go to a first-class hotel or lodgings at the landlord's cost. If that principle were admitted, any shoemaker dissatisfied with his drainage might go to the Marine Hotel and put up at the expense of the landlord. In this case, the defendant had acted liberally in admitting his responsibility and undertaking to have defects remedied, although at great expense. He dismissed the action.

Rural Labourers' Dwellings.

In Abbeyfeale Union the tenants of a large proportion of the dwellings have been proceeded against for non-payment of rent. The weekly rent is 1s., the average amount due is £4, about 1½ years' rent.

Artizans' Dwellings Company.

At the half-yearly meeting of this Company, held on July 5, the chairman, Sir Richard Martin, Bart., in moving the adoption of the report which recommended a dividend of 4½ per cent., and the carrying to Depreciation Fund of a sum equal to 3 per cent. on the paid-up capital, said:—"During the past half-year we have been exceptionally busy. Our existing contract for 77 cottages at Seville Place is being carried out satisfactorily, and we hope that next year we shall have the advantage of a good return from this property. We have purchased from Messrs. Guinness a block of buildings at Rialto, South Circular Road, which they built some years ago for their workmen. The entire site contains over 8 acres, of which 7 are now available for buildings, and the entire property is free of rent. The block of dwellings has been erected in the most substantial manner under very careful supervision, and contains 110 tenements. We have concluded a contract with Messrs. Meade for the erection of 86 dwellings on a portion of the site, and considerable progress has been already made with this work. We believe that this site will be from its situation one of the most popular of the Company's property. As regards the Corporation sites, we have practically settled all preliminaries for the plot at Crampton Quay, and have submitted plans to the Corporation Finance and Leases Committee. We hope very soon to get to work there; the plans provide for the erection of 18 shops and 60 dwellings, and we believe that both the shops and dwellings will be eagerly sought for. With reference to the plot at West Arran Street, after the Corporation had agreed to our offer for it they thought that it would be more useful as an extension of the Smithfield Market, and agreed to give us an alternative site if we waived our claim to the one at West Arran Street. A deputation from the Smithfield salemasters also waited upon us with the same object, and we came to the conclusion that we ought not to stand in the way of any public improvement. Since then the Finance and Leases Committee of the Corporation, acting on instructions from the Municipal Council, offered us another site at the rent placed on it by their valuer, viz. £61, but we could not see our way to offer more than £50 for the site, and negotiations on the subject are at a standstill. Our rents continue to be well paid, and the increase in our revenue of £271, as compared with last half year, we regard as satisfactory. The arrears amount to £111, and the bad debts to £240, and considering that since our formation in 1876 we have collected £93,739 in rents, we think the loss from bad debts very small, being hardly more than ¼ per cent. of the rents collected. Now that the Corporation have obtained, chiefly through the exertions of the Lord Mayor, their "Consolidation of Loans" Act, which will give the citizens considerable relief in taxation, we trust that they will adopt the system of differential rating with respect to Artizans' Dewellings. This course will unquestionably largely stimulate the erection of new dwellings, and will result in an ultimate advantage to the city rental by increased rates from improved houses. The population of our dwellings now numbers 7,297, and the deaths among them were only 34 during the past half-year, which is extremely satisfactory. Of these deaths 12 occurred among children under 5 years of age. There are in our buildings 1,490 children under 5 years, and it is encouraging to think that these children are living under conditions which will enable them to become useful and healthy members of the community.

Notification of Infectious Diseases Bill.

The Dublin Sanitary Association have requested Her Majesty's Government to have this Bill extended to Ireland, and have addressed themselves to various members interested in the question with that object. They have received assurances from the Government that the Bill will be extended to Ireland, if not antagonistic to the wishes of the Irish members.

SANITARY MATTERS IN HUNGARY.

(From our own Correspondent.)

The Hungarian Hygienic Association.

At the last annual meeting of the Hungarian Hygienic Association, lately held at Buda-Pesth, the Vice-President, Dr. Markusovszky, pronounced a glowing eulogium of the late President of the Association, the Minister Trefort, who was perhaps the only one among our active politicians who appreciated the high importance of hygiene, and tried to improve the deplorable sanitary condition of the country. He died last year, and has not yet found a successor. Our statesmen and politicians are too much engaged in the questions of the day to be inclined to do anything for the improvement of the future.

Its programme.

The Vice-President gave a short sketch of the future programme of the Association. This comprises the popularizing of sports and out-door pastimes, the regulation of working hours, Sunday rest, and the creation of healthy dwellings for the lower classes, &c. It may be noted that there is no new departure in this programme; but we are satisfied if we can imitate the nations which have made hygienic progress, and apply the results of their work and experience to our own national life. In its main lines, the policy of promoting public health must be the same everywhere; the difference lies, I think, in matters of second-rate importance only.

After the Vice-President's speech, the Secretary,

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Professor FODOR, gave a lively sketch of the activity of the Society, from which I extract the following points.

Feeling the necessity of a thoroughly satisfactory inspection, the Association applied to the magistrate of Buda-Pesth. On their request the number of acting veterinary surgeons in the city slaughter-houses was increased, and the inspection made more thorough.

Inspection of meat.

The liquor question was another important matter discussed by the Association. In this matter the circumstances are entirely different from those in England; there is no system of licensing dram-shops, &c., with us. The right of selling alcoholic liquors belongs to private persons—in most cases to the landlord—to corporations, and sometimes to the State. The proprietors exercise this right through their publicans, who are almost exclusively Jews.

Liquor licenses.

There will now be a change. From January 1, 1890, the State will be the only proprietor of all those rights termed *regalia minora*—minor royal rights. It will license the liquor-shops and superintend the selling of liquors. Our Association has the merit of having caused the insertion into the Bill brought in by the Government, a clause to the effect that the authorities are obliged to take into consideration the sanitary interest of the place when granting licenses. The struggle over this question is much the same everywhere, financial interest *versus* morality and public health. The necessity of diminishing the deficit in the State revenue being the more pressing, it rules even where other factors should, and the friends of public health having been very few up to the present time, and their influence being relatively weak, there is no doubt it will rule for some years. There will be licensing of more liquor-shops than are required, but the struggle at least has commenced

M. KORÖSI, Chief of the Statistical Bureau of Buda-Pesth, and member of the Society, touched on the circumstances which promote the spreading of epidemic diseases in the metropolis, and made a detailed statement how to prevent epidemics in future. These propositions were discussed by an *ad hoc* committee, and suggestions made to the magistrate.

The spread of epidemics.

The Association was further active in creating an organization for the support of paupers, in preventing the building of unhealthy cellar-dwellings, and in promoting school hygiene, &c.

The lectures given by members of the Association on different subjects, contribute very largely to create a public opinion on sanitary matters. The members and funds of the Association are alike increasing.

Yet in spite of all these efforts, the sanitary condition of the country is deplorable in the extreme. In the years 1878–82, there was an average of 564,531 deaths in Hungary, the death-rate being 36·1 per 1,000; during the same years it was only 30·5 in Austria, 25·8 in Germany, and 22·4 in France. In the years 1883–87, there is a slight improvement, the average number of deaths being 528,550, the death-rate 32 per 1,000; it was 37·5 in 1878, and 37·4 in 1880! There is still a good deal of work to be done. So far as I know, our sanitary authorities are at a loss in respect to the causes of this immense mortality.

The insanitary condition of Hungary.

High death-rate.

The mortality amongst children is enormous. The lower classes do not care much for the life of the children, but that does not explain the short-life duration of grown-up people. The occupation of the people is a very healthy one, being mostly in connection with agriculture; the urban population is very small, but still the death-rate is one of the highest in Europe.

Enormous infant mortality.

NOTES FROM THE NORTH.

(From our own Correspondent.)

SEVERAL serious cases of typhoid fever having occurred at Walker, near Newcastle, notice has been served by the surveyor on several tenants in Caledonia Street and Ironworks Street to remove their poultry, which are supposed to be kept in the yards, but are often found in the houses. A man employed by the Local Board, lost a son by removing infected bedding, whilst he himself suffered for several weeks from the same cause.

The healthiness of industrial dwellings, when properly constructed, is proverbial; few, however, can compare with the Improved Dwellings at Newcastle-on-Tyne, where, out of an average population of 450 to 500 persons, there was only one death (and that the result of an accident) during the year 1888. Credit is justly due to Mr. Price, the resident agent there, for his marked attention to sanitary matters.

On Monday August 5 another improved open space at Newcastle-on-Tyne was devoted to public recreation. The site called the Bull Park is the one occupied by the recent Newcastle Exhibition. The Swiss Chalet and other memorials of the above popular show still remain on the ground, and a track for cyclists as well as other attractive features, will be found here.

The Nineteenth Annual Report of the committee of the Sunderland and Bishopwearmouth Infirmary is an interesting document. It shows, out of a total income of £8,122 from all sources, no less than £3,788 12s. 3d. is derived from workmen's direct subscriptions, as well as the aid they contribute to the institution in various other shapes. This pleasing result is attributed greatly to the encouragement which the working men of the town receive as to electing their own representatives on the committee, which naturally leads them to take a great interest in the welfare of the institution.

INFANT MORTALITY IN HULL.

UNDER the auspices of the Hull Sanitary Association, a meeting of ratepayers and others has been held at the Town Hall, Hull, for the purpose of discussing the question of the large mortality amongst children, arising from improper treatment and the want of knowledge of sanitary principles. The MAYOR (Dr. Sherburn) presided, and there was a very influential attendance of medical and clerical gentlemen, and also a number of ladies.

The MAYOR said that several members of the Association had approached him, drawing attention to the great mortality which exists in Hull amongst the infantile population, and requesting him to call a meeting to discuss such an important matter. He had very great pleasure in at once acceding to the request, and the result was the present meeting. The causes of the fearful state of infantile mortality seemed so overwhelming in number that it was a very great thing to undertake the remedies. These remedies were so difficult to bring into play, that whether any practical good would result from the discussion was, he thought, open to a certain extent to doubt. Early and improvident marriages particularly amongst the poorer classes, resulted in the bringing into the world weakly and sickly children, for which they were unable to obtain sufficient nourishment. The use of artificial and other improper foods were also the causes of loss of life. If they could arrive at any practical good from their discussion of this subject he should be glad.

Dr. MASON (Medical Officer of Health) then read a paper on the subject, showing the number of statistics of the large infantile mortality in the United Kingdom, and, spoke of the cause as being to a large extent the improper feeding of the children. He impressed upon the ladies the humane action it would be of them to visit the homes of the poor, and inculcate those feelings of refinement which he was sure the poorer class of people were so ready to appreciate. If such was the case he was sure there would be a speedy amelioration. He spoke of the Bill introduced by Mr. Ritchie, rendering it compulsory on parents and medical men to notify cases of infectious diseases. If they could obtain powers such as these, they would be of great use, for much depended on the community in which the disease occurred, in helping the authorities to deal with the matter.

Dr. H. THOMPSON read a paper on the same subject. Traversing the list of things to which the mortality was

especially attributable, he spoke of the evils of drunkenness, transmission of hereditary taints, the use of starchy substances as articles of food, improper clothing, &c., and the evils of infantile insurance, which he would prohibit under the age of ten years.

Mr. J. B. ANDERSON (Secretary of the Charity Organization) moved a resolution requesting the Corporation Sanitary Committee to circulate amongst the people posters and leaflets calling attention to the evils exposed by the conference and giving them simple rules for prevention.

The Rev. H. JOB seconded, and Mr. J. W. BLAKENEY supported, by referring to tight lacing, which he warmly denounced. Councillor Dr. HOLDER and Councillor COHEN also supported, and it was passed unanimously.

Mrs. PRIESTMAN moved a resolution calling earnestly upon ministers, district visitors, school teachers, &c., to exercise their influence. The Rev. Dr. LAMBERT seconded, Mr. J. A. WADE supported, and the motion was agreed to.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

"Something attempted, something done."

ABERDEEN.—Dr. Matthew Hay reports that the first quarter of the current year presented a more healthy record than the same quarter of any year during the present decade. The death-rate from all causes (18·7 per 1,000) was lower by fully 4 deaths per 1,000 than the average of the last ten years, and represents the large saving of 125 lives. In April, and still more in May, the death-rate showed an increase, chiefly due to an epidemic of measles, which has been the distinguishing feature of the year. It began with 20 cases in the last two weeks of 1888, and reached a total of 484 cases by the end of March last. A further 406 cases were reported in April and 731 in May. The mortality, originally small and specially while the disease was most prevalent in the west end or Old Machar division, has gradually assumed higher proportions as the disease invaded the poorer portions of the city. It is almost superfluous to state that the child-mortality has shown a corresponding increase, and that the miasmatic mortality is much above the average. Of other zymotic diseases the record is remarkably clean. Dr. Hay hopes that such statistics as he has had to deal with, will gradually bring the citizens of Aberdeen to regard measles and whooping cough as two of the most fatal maladies incident to child life, and as such demanding of them, morally as well as legally, the most strict observance of sanitary regulations and precautions.

Measles epidemic.

Infant mortality.

BEDFORD URBAN AND RURAL.—The freedom enjoyed by the borough of Bedford from all forms of continued fevers constitutes, in the opinion of its health officer, Dr. C. E. Prior, a most powerful testimonial to the purity of its water-supply, and to the satisfactory nature of its sanitary arrangements. The death-rate of 1888 was the lowest ever recorded for the district, and there appears to have been an entire absence of epidemics. The rural district was not quite so fortunate, inasmuch as it was visited by a rather severe outbreak of enteric fever. This outbreak, however, was not so much the result of sanitary defects, as of direct personal contagion. Neither milk nor water had, apparently, anything to do with the propagation of the disease. Dr. Prior urges the provision of an infectious diseases hospital, either by the Rural Authority alone, or in combination with the Urban Authority. There is also need for improvement of the water supply of some of the villages. The respective death-rates were 13·28 and 14·29 per 1,000.

Outbreak of typhoid.

Infectious hospital needed.

Water supply of villages.

CARDIFF (Population 122,141.)—The sanitary administration of this borough is based on such admirable principles that the new health officer, Dr. E. Walford, has in his first report but few recommendations to make. He calls attention, however, to grave and dangerous defects in the closet accommodation of courts, and advocates the substitution of trough-closets, such as are in use at Liverpool. In four instances this has been effected, and the closets are found to be working admirably and to be in every way adapted for their purpose. Two of the worst courts were demolished during the year, and extensive business premises erected on their sites. Dr. Walford states that overcrowding does not exist in the borough to any great extent, and moreover the continual inspections have the effect of checking this evil. The number of new houses every year meets the requirement of the district, but for the better regulation of such dwellings, it has been deemed advisable to adopt a new code of bye-laws. The routine work was as usual most carefully carried out. With regard to general mortality the year's record was comparatively satisfactory, the death-rate, on the more correctly estimated population above given, being 18·0 per 1,000. Zymotic diseases yielded a slightly increased rate, 2·9 against 2·6, a severe epidemic of measles contributing to this result. Schools played an important part in disseminating the disease, which was noticed to be most fatal in the southern parts of the town where the soil is habitually damp. Four deaths were registered from small-pox.

Defective closets.

Trough-closets recommended.

Overcrowding.

New bye-laws.

Measles.

Schools.

Soil.

DERBY (Population, 96,241).—Dr. Iliffe writes, in his report for 1888, that though it is gratifying to have to record a low death-rate, and a favourable position in this respect as compared with all the other large towns comprised in the Registrar-General's weekly returns, yet Derby had much to contend with in its sanitary work during the year. It was particularly harassed by recurring attacks of small-pox, which spread themselves over several months of the year from January to August; and also by a constantly increasing number of scarlet fever cases, until the latter culminated late in the year in a most serious epidemic. The accommodation at the infirmary was unequal to the strain put upon it, and even when the 40 beds available at the Rowditch Hospital were placed at Dr. Iliffe's disposal towards of the end the year, on sixty-four occasions cases which sought admission had to be refused. Only 152 of the 756 cases notified, were afforded hospital accommodation. Typhoid fever deaths were somewhat less than the average proportion for the previous 10 years, though there were actually more from this cause than from diarrhœa. The medical officer fully believes that typhoid fever will be but little diminished in Derby until the privy middens and tub-closets, as they now exist, and which infest nearly the whole Borough, are abolished. The death-rate for 1888 was 16·3 per 1,000.

Small-pox.

Scarlet fever.

Hospital provision insufficient.

Typhoid fever.

Privy middens again condemned.

DUBLIN (Population, 353,082).—A feature of Sir Charles Cameron's reports on the sanitary work in Dublin is the constant attention given to tenement houses. Month after month the totals of nuisances therein discovered and abated, and the improvements effected, form very important items in the returns of the sanitary operations. Some of the gradual reduction in the death-rates of late years has undoubtedly been due to improvement of the sanitary conditions. It is interesting to note what has been done in the way of sanitary improvements since 1879, the first year that the Corporation were provided with adequate funds. Over £5,000 have been expended in making and improving street sewers, and a quarter of a million has been laid out in street paving. Loans amounting to £22,000 were procured for the purpose of carrying out domestic

Tenement houses.

Recent sanitary operations.

scavenging; and subsequently, at an annual cost of £3,000, the system of cleansing the yards and sanitary accommodation of the tenement houses was adopted. Nearly eight acres of unhealthy dwellings have been cleared, at a cost of £53,252; and the formation of new streets, at a cost of £100,000, has led to the demolition of a large number of insanitary dwellings. Two fine blocks of artisans' dwellings and a nightly lodging-house have been erected at a cost of £27,000, and a plan for the construction of 85 dwellings for the humbler classes is now being carried out at an estimated cost of £10,000. Public swimming and reclining baths, and a large wash-house, recently erected at a cost of nearly £12,000, have been fully taken advantage of, more especially the wash-house, which is a great boon to the working classes in the south-eastern part of the city. To these improvements and a vigorous enforcement of the sanitary laws in reference to the tenement houses, may fairly be attributed, to some extent at least, the improved state of the public health in Dublin. In 1888 the death-rate, which in many former years had exceeded 30 per 1,000 persons living, fell to 24·5 per 1,000, or 1·5 per 1,000 lower than the year 1886, which was the healthiest on record. It is satisfactory, too, to find that in the first quarter of the present year the general death-rate is 5·6 per 1,000 below the mean rate for the corresponding period of the previous 10 years whilst the death-rate from contagious diseases is by far the lowest ever recorded in Dublin.

New wash-house.

EALING (Population, 22,800).—The general mortality statistics given in Dr. Patten's report for 1888 are extremely favourable, and indicate a good sanitary condition of the district. The death-rate was 10·9 per 1,000, and only nine deaths were attributable to zymotic diseases. There was no serious epidemic during the year. Dr. Patten expresses the opinion that the prompt removal of cases to the hospital went far towards checking the spread of infection. The sewage works continue to be carefully managed, and regular and systematic flushing is carried out,—an operation to which Dr. Patten rightly attaches the utmost importance.

Zymotic diseases.

Hospital isolation.

LEICESTER (Population 146,790).—Dr. Henry Tomkins's annual reports have, during recent years, had a special value, as they have contained the results of his investigations into the causes and etiology of summer diarrhœa. The year 1888 was remarkable for the very great decrease in the prevalence of this disease, and for the lateness of the period at which the disorder began to prevail. The subject is one of great interest, and has been taken up with much enterprise by Dr. Tomkins, who, from experiments and close observations, has now reason to believe that he has detected the particular micro-organism concerned in the production of diarrhœa. There was during the year in Leicester a continued comparative immunity from scarlet fever; but more cases of small-pox were met with than for some years, though happily, as a result of the vigilant measures adopted as each case arose, no serious spread of this disease took place. The whole history of the various series of cases shows beyond a doubt the influence of vaccination in modifying small-pox, the modified disease bearing no more resemblance to the disease as it occurs naturally in the body of one whose system has been unaffected by the vaccine influence, than, to use Dr. Tomkins's simile, a cut finger does to a smashed limb. Typhoid fever was very prevalent at the beginning of the year, and a number of cases occurred without any satisfactory local cause being discovered; unless it might be found in the fact that an infected sewer ran through the neighbourhood. The new main drainage scheme made fair headway during the year; new sewers, both foul and storm, were constructed in public and private streets; 2,290 yards of old sewers were opened up, cleansed, and provided with inspection-shafts, so that there is hope that the sewers of the town will very shortly be in satisfactory condition. A project to provide a model lodging house has at length taken definite shape, and additional public baths are in course of erection, so that the year was by no means barren of improvements. The death-rate for 1888 was the lowest on record for many years being only 17·9 per 1,000.

Diarrhœa.

Value of vaccination.

Typhoid fever.

Proposed model lodging.

MACCLESFIELD (Population 37,514).—No great sanitary improvement is chronicled in Dr. George Bower's report for 1888, but it is evident that very vigorous work was carried on, a house-to-house inspection of a large portion of the district being made, whereby large numbers of nuisances were found and ordered to be remedied. The question of main drainage and disposal of sewage was much under consideration. Various schemes were brought under the notice of the authority, and should any be completed, Dr. Bower expects a considerable reduction in the mortality. The year was favourable in respect of public health, the infant mortality, and both zymotic and general death-rates showing great improvement. The greatest sanitary defects are, in the Health Officer's opinion, the primitive state of the drainage in many parts of the town, and the pollution of the river by the sewage. As these are sought to be remedied, there is every reason to hope for still more satisfactory statistics in future years. The death-rate for 1888 was 18·3 per 1,000, of which zymotic diseases produced 1·4.

Sewerage.

Defective drainage.

Pollution of river.

ST. MARYLEBONE (Population 156,290).—The tables of figures and statistics given in Mr. A. Wynter Blyth's annual report, testify to the constant supervision of those minor matters, which, taken as a whole, are of no mean importance, and largely affect the well being and comfort of the community. There were twenty-one prosecutions under the Sanitary Acts; eighteen of these being for disobedience of sanitary orders. One was for the unusual offence of refusing admission to premises where there was good cause for belief that a nuisance existed. Measles was the only zymotic disease which was unduly prevalent; 237 cases were recorded as being treated at the different hospitals and dispensaries, but this number represented, of course, only a fraction of the whole. The outbreak was very fatal, 119 deaths being ascribed to it. The general death-rate for the year was 18·2 per 1,000. Special attention is now being given to the mortality of tenement streets, and a long account is given of their condition in the *Sanitary Chronicles* of April 1889. Those specified all show a high general death-rate, an excess of deaths from tubercular diseases, and they require constant supervision to keep them in anything like decent order. There are in some of the streets defects in structure and drainage, which also contribute to the excessive mortality, and many of them have been made the subject of recommendations for improvement in previous reports.

Sanitary prosecutions.

Measles.

Tenement mortality.

WEST HAM (Population 178,000).—Dr. Charles Sanders describes the year 1888 as one marked by much sanitary advance, and, generally speaking, improved public health. The death-rate of 16·0 per 1,000 was decidedly satisfactory, a noteworthy improvement being shown in the deaths of young children. One of the chief events of the year was the passing by Parliament of the "West Ham Corporation Improvements Act, 1888." This contains various sanitary provisions of great importance, the most noteworthy being for powers to obtain compulsory notification and to collect house refuse on the "pail system." A severe thunderstorm, succeeding to several days of heavy rain, caused whole streets and districts to remain under water for several days. Dr. Sanders considers that not much sickness arose in direct consequence of these floods, though there were cases of low forms of sore throat, probably infectious. It is certain that many of the worst streets underwent a process of cleansing and disinfecting such as they had not experienced since their foundation.

Compulsory notification.

Floods.

Sore throats.

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WOLVERHAMPTON (Population 81,692).—Dr. Henry Malet reports that the year 1888 was in many respects a very trying one; measles and whooping cough being both above the average as regards prevalence; scarlet fever rather threatening; and phthisis and chest affections very high. The annual death-rate (19·5 per 1,000) was, however, the lowest but one recorded, that for 1885 being 19·4. The work of the borough hospital greatly increased; in 1887 there were 61 cases admitted; in the year under notice there were 111, while 20 remained in from the previous year. Of these, 118 went out well, and 3 died, leaving 10 cases in hospital at the close of the year. Dr. Malet thinks that the provision for isolation in Wolverhampton is far below what it ought to be, and he gives good reasons for urging its increase. With regard to the incidence of typhoid fever and diphtheria, he points out the gravity of those apparently trivial drainage defects which so often are associated with the cases; and he especially records a sudden and fatal attack of the latter disease which followed on the emptying of wet ash-pits.

Hospital operations.

Hospital isolation deficient.

QUARTERLY REPORTS OF PUBLIC ANALYSTS.

LEICESTER (Population, 146,790).—Commenting on the amount of adulteration practised in this borough, Dr. TOMKINS remarks that there is one satisfactory feature of modern adulteration, compared with what existed a quarter of a century ago, *i.e.*, that although many adulterations do undoubtedly still go on, the majority of them are not of a deleterious character, or such as to be very prejudicial to health; so that the unwary purchaser does not, as a rule, suffer in his health so much as in his pocket. Of 158 samples collected for analysis 17 were found to have been tampered with, and of these 9 were of milk. The usual adulterations practised are the abstraction of cream or the addition of water, and, considering how important an article of food milk is, in the dietary of young children and sick persons, the man who wilfully reduces the nutritive value of the milk he sells is a dangerous rogue, whose delinquencies deserve severe punishment. It would appear that the extra vigilance of the last three years is having a good effect; but as the analyst justly complains, the fines inflicted are usually so small as scarcely to deter the dishonest milk-seller from continuing his malpractices. This is a point to which we have frequently drawn attention. Perhaps the most important prosecutions under the Food and Drugs Act, during the past year, were those for selling adulterated lard. In the worst case a fine of £10 was inflicted. It was certified by Dr. Tomkins that the said sample was not pure lard, but was a mixture of some vegetable oil and animal fat, not lard. To controvert this, three eminent analytical chemists were brought from the North of England by the firm who supplied the lard to the retailer. Under these circumstances, the magistrates forwarded part of the sample to Somerset House, where it was analyzed by the Government referee, with the result of exactly confirming the analyst's opinion. Thirty-one samples of well-water were examined, five proving unfit for drinking purposes. Orders were issued for the closure of the wells.

Milk.

Inadequate fines.

Lard.

Impure well-water.

SALFORD.—In his quarterly report on the adulteration of food and drugs in the borough, Mr. J. Carter Bell, public analyst, stated that he had analysed 181 samples, consisting of 161 milks, 9 peppers, 6 butters, 3 lards, and 2 drugs. Of these, 10 were adulterated—6 milks, 3 butters, and 1 drug. The milks were adulterated with from 4 to 10 per cent. of water, and were robbed of from 20 to 30 per cent. of cream. Eleven of the milk samples were very poor, and if a first-class milk had been taken as a standard, these eleven samples would have been returned as adulterated. Two of the samples of butter were adulterated with 85 per cent. of foreign fat, and one butter was adulterated with 10 per cent. of water. This water was over that which was natural to the butter.

ST. MARYLEBONE PARISH.—During 1888 the large number of 553 samples were analyzed by Mr. A. WYNTER BLYTH, under the Sale of Food and Drugs Act. The list of samples comprises all classes of food as well as alcoholic and non-alcoholic beverages, condiments and drugs. Of the whole 552 samples, 15 were adulterated. These 15 were samples of milk. The continuous and systematic supervision of milk has borne good fruit in prohibiting adulteration. In 1887, out of 294 samples 14 per cent. were adulterated, and there were 23 cases in which the vendors were prosecuted, the fines altogether amounting to £53; in 1888, there were only 15 cases of adulteration and 14 convictions, the fines amounting to £16 2s. It is satisfactory to note that although nearly 100 samples of butter were taken by the inspectors, in every case the butter was genuine. Instead of taking samples of water from one stand-pipe, samples were almost simultaneously taken from several stand-pipes, and the results compared; in this way any local pollution or defect could be readily detected; but in all cases the composition agreed.

Milk.

Butter.

Water.

SURVEYORS' AND SANITARY INSPECTORS' REPORTS.

DERBY (Population, 96,241).—In commenting upon Mr. A. E. Clarke's report for 1888, we cannot do better than repeat the encomium bestowed upon his work by Dr. Iliffe, medical officer of the borough. "The report of Mr. Clarke for 1888 bears upon it the same impress of thoughtful, well-done work in sanitation which has characterized his reports for many years, and it will serve not only as a valuable record of what has been done during the past year, but will also, in a great measure, act as a model of the work that should still be carried out in the future. That much of the increased healthiness of the borough is due to the courageous, energetic, and conscientious work of Mr. Clarke goes without saying." Mr. Clarke reports on the Food and Drugs Act, Abatement of Nuisances, Unsound Meat, Contagious Diseases (Animals) Act, The Canal Boats Act, Slaughter Houses, &c. There were 998 cases of epidemic and contagious diseases visited, and all houses in which such cases occurred were liberally supplied with disinfectants.

FROME RURAL.—An invasion of small-pox at Coleford during 1888 entailed a considerable amount of extra work upon Mr. W. W. Purnell, the inspector of the Kilmerton district. There were thirteen cases, and, though every precaution was taken, two proved fatal. There can be no doubt that but for the temporary hospital and nurses provided, the number of cases would have been much greater. There were also two cases of typhoid fever and three cases scarlatina. In each case disinfectants were given, and, on the convalescence of the patient, the house was fumigated. Swine fever again made its appearance in the neighbourhood, and special care was given to an examination of the piggeries. Two were ordered to be closed, while improvements in drainage and ventilation were made in others. Mr. Purnell gives good advice as to the building of cottages, urging that the house should be considered to extend some yards beyond the threshold of the door; for if the ground is not paved, or if it is so roughly paved that liquids cannot run away, the result must be a dirty house, and in hot weather the formation of injurious gases. Very often sickness ensues, with perhaps the necessity for parish relief, so that owners would have to pay more in

Small-pox.

Temporary hospitals.

Swine fever.

unnecessary poor-rates than would serve to keep the drainage of their property in sanitary condition. In his annual report for 1888, on the other division of this district, Mr. W. Adams describes at some length the working of a new water-supply now completed in his district. The water is declared to be excellent, and those who have already had the benefit of it cannot speak too highly in its praise. As it is a gravitation scheme, Mr. Adams thinks the yearly cost of working will be small. The mains, which are seven miles in length, are all laid at the side of the public highway, and the whole of the works have been most successfully carried out. It should be noted, however, that several important dairy-farms are still without a proper supply of water; for, as Mr. Adams remarks, it is most essential that pure water should be provided for cleansing dairy utensils. Some useful works of drainage, &c., were effected during the year. It is satisfactory to find that no complaints have been made as to nuisance from the working of the Nunney sewage tanks.

New water-supply.

Water for dairies.

GLASGOW.—While allowing for the favourable climatic conditions of 1888, as important factors in the favourable health bill of the year, Mr. Peter Fyfe justly claims some share of the improvement as a result of all that has been done by the sanitary department. The struggle against nuisances and filth is a severe one in a city such as Glasgow, where want of proper ashpits and want of suitable water-closet accommodation prevails to a very great extent. Mr. Fyfe explains that it is not uncommon for as many as 10 to 15 families to be devoid of this necessity of civilized life, while from 50 to 60 families are compelled to use the same ashpit or privy. A great advance was, however, made during the year; chiefly by the condemnation by the Trustees of the City Improvement of certain insanitary properties belonging to the trust, and by the repair and improvement of others. A visiting sub-committee of unhealthy dwellings was organized, and the result of their investigations was to endorse fully Mr. Fyfe's recommendation for immediate attention to the provision for the disposal of excrement at tenement houses, and to give expression to their opinion that in no case is a privy sufficient accommodation for houses occupied in flats. This dictum is of incalculable importance to the Sanitary Committee, the inspector being of opinion that legislation must be obtained to compel the provision of water-closets throughout the city. Some interesting particulars are afforded as to model-lodging houses, and the social facts underlying their use. Mr. Fyfe records the belief that these institutions are working for health and good in the city. Drain-testing has much increased, the work in this branch being much appreciated by the public. In 1886, the average of tests was 24 per fortnight—now it is 120. The setting apart of small unused areas as childrens' playgrounds has been an improvement of much value, thus saving them from building operations which would further add to the congestion which exists in the city. The number of inspections made for the discovery of nuisances and infectious diseases was 340,867, and the nuisances removed or remedied amounted to 18·159. The number of samples of food, &c. submitted for analysis was very small, being only 95; and of these 21, or nearly one-fourth, were found to be adulterated. Prosecutions were instituted in 14 cases, and 10 convictions were obtained, the fines amounting to £27 15s.

Ash-pits and closets deficient.

Inefficient disposal of filth.

Model lodging-houses.

Drain-testing.

Adulteration.

GREENOCK.—Mr. James Devine reports the following prosecutions under the Sanitary Acts, during the month of June last. One person was prosecuted in the Sheriff Court for having contravened the Milk Shops Regulations, by exercising the occupation of a purveyor of milk, in a shop which was not so constructed and situated as to allow it to be adequately ventilated with pure air, and which was used for purposes incompatible with the proper preservation of the cleanliness of the milk vessels and milk therein, viz., for the sale of vegetables, firewood, &c., and on conviction was fined 10s., with 10s. 6d. modified expenses, or seven days. 113 lbs. of unsound butcher meat, exposed for sale in a butcher's shop, were seized and destroyed under Magistrates' warrant. The owner of the meat was prosecuted in the Sheriff Court, and was convicted and fined 40s., with 10s. 6d. modified expenses, or seven days. One householder was prosecuted for having failed to report, at the Sanitary Office, the existence of infectious disease in his house, and for having allowed members of his family to attend a Public School therefrom while the disease existed therein, and while the house was an infected house within the meaning of the 199th Section of the Police Act, and, on conviction, was fined for the first offence 20s. or seven days, and for the second was admonished. During the month the smoke test was applied to ten properties, in five of which the plumber work only was tested, when it was discovered that all the drain connections were dangerously faulty, but otherwise, with the exception of several trifling defects, it was found to be in fairly good order. The defects were at once made good. In the other five properties the drains and plumber work were tested and both found to be defective, the drains in two instances seriously so.

LEICESTER (Population 146,970).—No branch of sanitary work is of more importance than careful and systematic house inspection. This is a special feature of Mr. Frank Allen's annual labours, and it has resulted in a large number of improvements. It is gratifying to find that so much of the work is done upon what are described as "informal orders," and prosecutions were comparatively rare. The "smoke test" was employed in the examination of 301 houses and premises, and the number of defects found by its aid was 192. The courts have been regularly inspected, the worst of them at weekly intervals, and extensive paving and drainage orders have been executed. Mr. Allen is able to report that in numerous instances the ash-pits were abolished, and portable bins provided by the owners of cottage property, the contents of these being removed once every week. The adoption of these receptacles is largely on the increase, the number now in use being upwards of 3,400. Mr. Allen impresses upon the Corporation the advisability of adopting at once a borough pattern bin to ensure uniformity of size, suitability of construction and the use of good materials.

Drain-testing.

Portable ash-bins.

MACCLESFIELD (Population 87,514).—The abstract of work done by Mr. W. Jenkins during 1888, contains references to almost every class of nuisances and the total of abatements would indicate a vigorous method of dealing with them. A sanitary survey was made of 918 houses in the poorest parts of the borough; 194 were inspected on account of infectious diseases, while 2,926 visits were made on account of the same, and 562 supplies of disinfectants were given. Nearly the whole of two months' time and attention was absorbed with an outbreak of small-pox, which commenced in April. Proceedings were instituted against a person for wilfully exposing a child suffering from scarlet fever, by sending it to a public school. She was suitably admonished and let off with the payment of costs. Two cases of adulteration were punished by the infliction of a fine of twenty shillings and costs in each case.

Small-pox outbreak.

Adulteration.

ST. MARYLEBONE (Population 156,290).—This parish has been divided into four districts, and each district assigned to an inspector. The general results are duly tabulated, the routine work being almost of uniform character in each district, but with slightly different results. Mr. A. Perry has inspected 779 houses, or about 16 per cent; of these, 345 are reported as improved. New pipe drains were laid down to a length of 11,965 feet, and a considerable number of minor nuisances were dealt with. Mr. G. Watts inspected 905 houses, or about 33 per cent. Only

Mr. A. Perry

195 were reported as in need of improvement.

Mr. Watts — In this district 875 feet of new drains were constructed Several articles of food exposed for sale were seized as unfit for use. Mr. Andrews paid over 4,000 visits to houses; disinfected in 75

Mr. Andrews — cases of infectious disease; and has given evidence in 13 cases at the police court. Mr. Phillips inspected 1,590 houses, being about 40 per cent. of the total number in his district; 530

Mr. Phillips — houses were permanently improved. Much attention was paid to drainage, no less than 13,567 feet of new pipe drains having been laid. Evidence was given by him under the Sanitary Acts, &c., on fifty-one different occasions.

SKIPTON AND SILSDEN.—Mr. C. C. Smith's reports on the work carried out during 1888, show no falling off in the systematic attention given to the discovery and abatement of nuisances. Though no very important undertakings are chronicled, the large amount of good and useful work effected deserves notice, especially that in the direction of drainage improvements. In Silsden no means have as yet been adopted for proper

Sewerage defects. — sewerage. The sewage is received for the most part into highway drains, which discharge into a tributary of the Aire. In all recently erected dwellings, however, the drains are properly laid and disconnected. Special visits were made in every case of infectious disease, the houses being afterwards disinfected and cleansed. The inspection of lodging-houses brought to light a case of overcrowding, for

Lodging-house inspection. — which a fine of twenty shillings and costs, was inflicted; while a similar fine was imposed upon another lodging-house keeper for admitting lodgers into his house after a case of small-pox had occurred, and before the dwelling had been certified as free from infection.

ILLUSTRATED SANITARY PATENTS.

7,362. (1888.) IMPROVEMENT IN BATHS AND WASHING UTENSILS. GEORGE JOHN FLAMANK, 39, Wolverhampton Road, Stafford.

The object of this invention is to supply and affix to baths and washing utensils in use a convenient receptacle for holding soap or sponge, &c.

I form my soap dish or metal or other suitable material formed with a strip bent so as to clip over the edge of the bath. I may also temporarily securely my soap dish to the bath by means of studs and slots, either of which may be on the bath or upon the soap dish.

These dishes may be made in either glass, metal, porcelain, wood, gutta-percha, or similar suitable materials, or combination of materials, and I prefer to form my soap dishes so that they receive the soap end-wise and not flat-wise, though I do not limit myself to any particular shape.

Claim.—The improvement in baths and washing utensils by affixing or annexing to them temporarily when in use, movable, and adjustable receptacles for soap and sponge.

9,924. (1888.) AUTOMATIC APPARATUS FOR THE PERIODIC PRODUCTION OF ANTISEPTIC AND OTHER SPRAYS. ALFRED RÉNÉ UPWARD, 22, Fairholme Road, West Kensington, London. [8d.]

This apparatus consists of a metallic store vessel, wherein a large volume of air or other gas is stored under a high pressure of several tons to the square inch. Liquid gas such as nitrous oxide is preferably employed, as the pressure in the vessel is thereby kept constant until almost almost all the gas is expended. This vessel is fitted with a controlling valve which allows of exact adjustment of the opening. A pipe from this valve enters a glass bubble indicator, connected by another pipe with a second or low pressure vessel, which is of thinner material. This second vessel, which is fitted with safety valves, is in turn connected by another pipe containing a tap with a vessel containing material for spray, fitted with an ordinary spray nozzle.

The pressure in the second vessel actuates the tap in the pipe, joining the second vessel to the spray reservoir by a self-acting apparatus functioning at the required pressures, thus actuating the spray at intervals by the passage of gas. The self-acting apparatus consists of a piston and cylinder; an india-rubber ball or other appliance. The instrument is put into operation by opening the valve fitted to the first or high-pressure vessel until a sufficiently large current of gas, as shown by the bubble indicator, flows.

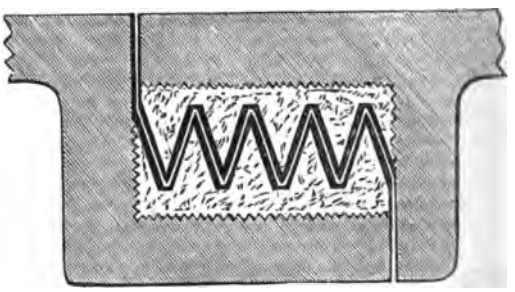
When no compressing apparatus is to hand for re-charging the first or high-pressure vessel when empty, the vessel may be re-charged by means of a slow combustion cartridge composed of a suitable material, such as to give out a large volume of gas during its combustion, and which, at the same time, contains sufficient oxygen to support its own combustion. The cartridge-holder is screwed into an aperture in the vessel, and made air-tight by an india-rubber washer.

Claim.—A storage vessel containing compressed air or liquified gas, and provided with a regulated issue tap or valve, in combination with a secondary chamber, automatically producing alternate charge and discharge by rising pressure or actual movement, the discharges being utilized to produce intermittent spray jets, &c., as described.

12,018. (1888.) COMPOSITE WATER-TIGHT PIPE JOINTS. HENRY MALCOLM RAMSAY, 11, Amyand Park Road, Twickenham. [6d.]

This invention consists in manufacturing specially formed flanged stoneware or other pipes, designed for the reception of the requisite materials, and the construction of composite joints by running or casting molten metal, or asphalte liquid cement, concrete, or other water-resisting substance, in such forms and manner as to make when jointed together a perfect water-tight joint.

The pipes are manufactured as above described, and the joint faces are formed by running or casting ferrules and linings in either of the above-mentioned materials, on



the spigots, and in the sockets of the pipes, as shown in the figure, or in separate circular blocks for attachment thereto, all by means of suitable male and female moulds, turned or otherwise prepared and adapted to produce the said ferrules and linings in a spiral form. The materials of which the castings forming the joints are made may be varied in proportion according to circumstances, and the above mentioned ferrules and linings in either case may be formed of a fine V thread pattern, a coarse V, or a round or square end, or any other form of screw or pitch.

If the separate blocks aforesaid are employed, they are attached to the pipes by the use of hot bituminous mastic.

This invention admits of considerable diversification according to circumstances, without departing from the general principle of it, and in all cases it contributes to the formation of a perfect water-tight joint.

Claim.—The construction of specially formed flanged pipes in combination with other materials and arrangements as described.

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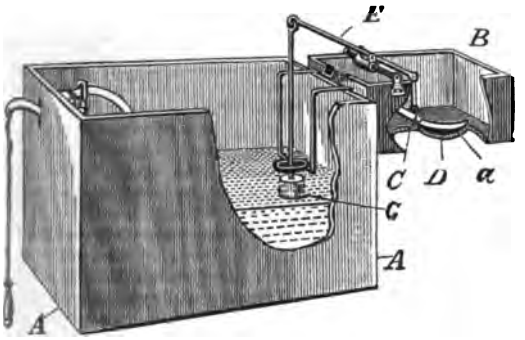
11,483. (1888.) A Disinfecting Apparatus for Water-closets. Henry George Planner, 1, Ledbury Villas, Stuart Road, Peckham Rye, S.W. [8d.]

The object of this invention is to provide a method of and means for mixing a proper and pre-determined quantity of disinfection and deodorising fluid with the water contained in a flushing tank, so that the operation of flushing may also perfectly deodorise the closet. The action of the apparatus being automatic.



The apparatus consists of a tank or receptacle *B* (holding the disinfecting fluid) which is attached to the flushing tank *A*, and is provided with a concave or cupped lever *D*, the one end of which dips down into a sinking *a* prepared for it in the bottom of the tank *B*, and the other end rests upon and over the edge of the tank *A*. A rocking bar *E* is provided with one of its ends attached to a float *G* on the water in the tank *A*, and the other end attached to the cupped lever *D*, by suitable means.

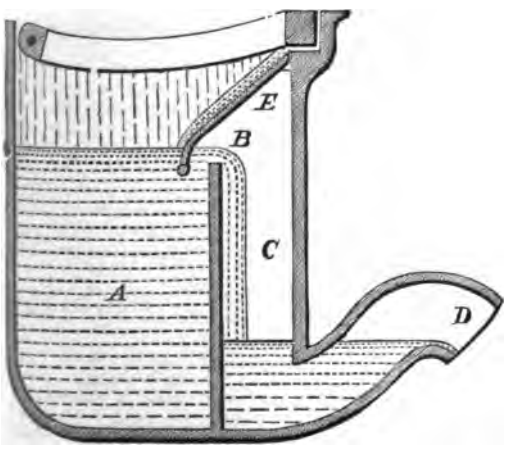
When the water is emptied out of the flushing tank *A* the float *G* falls, drawing down its end of the lever and raising the other end which is attached to the cupped lever *D*, and thus conveying as much of the disinfectant as the cup is constructed to contain empties, or tilts it into the flushing tank *A*.

There are several variations of the parts of this apparatus, though not departing from the principle described above.

Claim.—The apparatus as described.

17,654. (1888.) An Improved Street Gully or Gully Trap for Drains. Albert Green, 1, Cromwell Street, Hounslow. [6d.]

The improvement in gullies which is the subject of this invention consists in making a gully in two compartments, as shown in the figure. This has the effect of



arresting all solid matter which might otherwise be carried down into the sewer. The compartment *A* receives such solid matter, and is easily accessible for cleaning out. The second compartment *C* is protected by a lid *E* which is so adjusted as to form a water seal at *B*, and in conjunction with the syphon at *D* constitutes a double trapped gully.

The lid *E* is hung on pivots to open upwards whereby the compartment *C* can be readily examined. Further, the lid *E* is placed in a slanting direction in order that the whole superficial capacity of the gully may be utilized by reason of the external grating being made the full size of the superficial area of the gully.

Claim.—The employment of the slanting lid as illustrated.

7,602. (1889.). Improvements in the Method of Applying Soluble Disinfectants and Antiseptics, and in Means Therefor. Reginald Le Neve Foster, The Firs, Droylesden, Manchester. [4d.]

The object of this invention is by an improved method of applying solid preparations from or containing carbolic, cresylic, or other tar acids, or other soluble disinfectants, to render more available the disinfectant and antiseptic properties which they possess. And this invention consists essentially in providing that the said preparations are kept during the process of dissolution at or near the surface of the water in tanks or cisterns, or other vessels that it may be desired to disinfect.

This is carried into effect by placing the said preparations in a cage of perforated metallic or other suitable sheeting, gauze, or netting. This cage with its contents is rendered buoyant by means of cork or other sufficiently buoyant substance, and is so arranged that its under surface floats in immediate contact with the contents of the tank or cistern, thus allowing the disinfectant to dissolve therein and impregnate the contents of the cistern or tank.

Claim.—The method of applying soluble disinfectants described above.

8,919. (1889.) An Improved Drain Pipe for Indicating the Gradient or Fall. Irwin Clarke Wallas, 212, High Road, Kilburn.

The object of this invention is to secure a means of laying drain pipes to a correct and regular gradient or fall. This is effected by casting on the upper side of the pipe a projecting piece of any length, higher at the spiggot end than at the socket end, these heights varying according to the gradient or fall required. See figure.

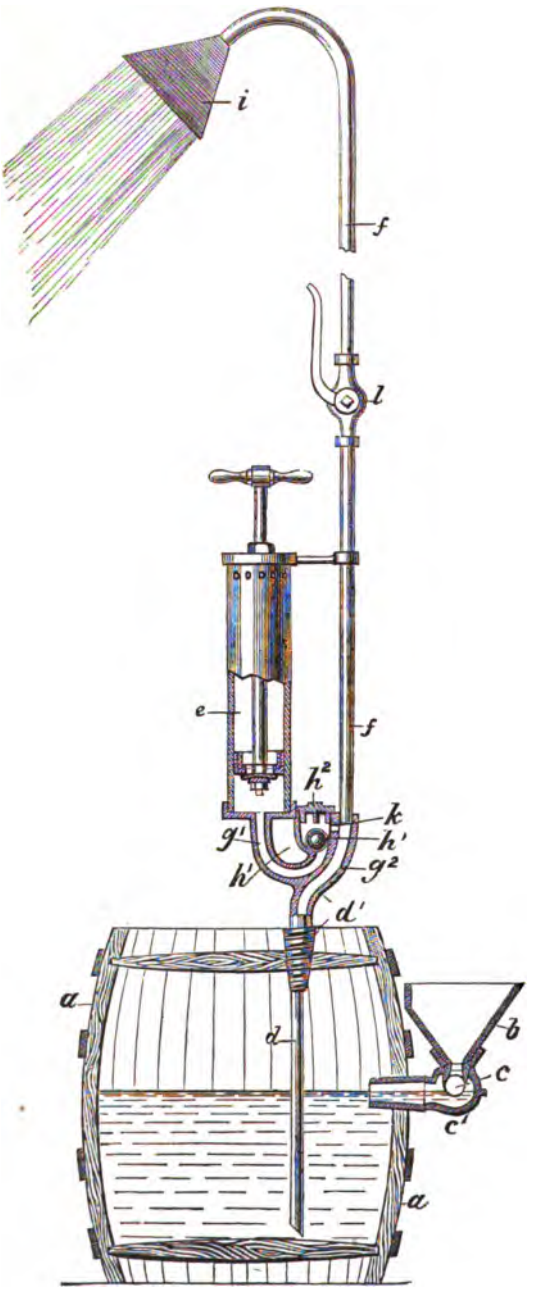
This projection must be sufficiently wide to take an ordinary spirit level. In laying pipes to a gradient of say 1 in 10, this projection is so shaped that while its upper surface which takes the spirit level is perfectly horizontal, its under surface, which is in the same plane as the whole of the pipe, shall slope at the required fall of 1 in 10. Thus the workman laying the pipes can by simply applying the level to the projection on each length of pipe be quite sure and accurate in laying the drain to the particular fall or gradient to which the projection on the pipe is set, and so greatly simplifying the operation of drain-pipe laying.

Claim.—The indicating projection as described, either fixed or movable or portable.

6,857. (1889.) Improvements in or appertaining to Shower Baths. David Grove, 24 Friedrich Strasse, Berlin.

This invention relates to the construction of a portable shower bath, which is remarkable for its simplicity and cheapness, also the readiness with which the apparatus can be operated, and its suitability for situations where the available space is limited. The bath is constructed as shown in the figure: *a* is a water reservoir, consisting of an ordinary beer or other barrel, into the bung-hole of which a funnel-like filling device *b*, with ball valve *c*, is

driven or screwed, and by means of which cold or warm water can be filled into the barrel up to the bung-hole, when the water in the barrel will force the ball valve *c* outwards, thus producing an air-tight closure of the tube.



A tube *d* for feeding in the air and pressing the water to the rose *i* is inserted in the tap-hole, which is provided with a threaded conical stuffing box d^1, so as to be air-tight. This conical stuffing box is preferably cast in one piece, containing the air and water ways g^1 g^2, the ball valve *h*, and stopper h^2. The air way g^1 is connected to the air pump *e*, and the water way g^2 to the tube *f* leading to the rose *i*.

The ball valve *h* is arranged to play in its casings h^1, between the air and water ways, and is in connection with the water way by means of the opening *k*.

The tube *f* leading to the rose is provided with a cock *l*.

When the requisite amount of water has been placed in the reservoir through the funnel *b*, the air pump is operated until a sufficient pressure of air is obtained within the barrel. Any escape of air or water is prevented by the ball valves *c* and *h*, which are pressed firmly on to their respective seatings.

The cock *l* is then opened, and the water passes up the tube *d*, g^2, *f*, and is discharged with considerable force through the rose *i*. This action continues until all the water has gone, the pressure of air being sufficient all through to keep the ball valves on their seatings until the apparatus is empty, and the compressed air escapes through the water ways after the water has passed through them. The ball *c* then falls back, and the apparatus is ready for re-charging.

Claim.—A portable shower bath, with the combination of parts as shown and described.

LIST OF APPLICATIONS FOR PATENTS
RELATING TO SANITATION.

FROM JULY 1, 1889, TO JULY 26, 1889.

[*This List is specially compiled for the* SANITARY RECORD *by Messrs. Rayner & Cassell, Patent Agents, 37, Chancery Lane, Holborn, from whom all further information relating to Patents may be had on application, gratuitously.*]

July 1.—No. 10,591. BLANCHE LINGARD RAY, Prospect Lodge, Bedhampton Hill, Havant, Hampshire. Improvements in apparatus for the filtration and purification of water for household or drinking purposes and the like.

No. 10,631. JAMES SMITH. Improvements in self-acting barrel filters.

July 2.—No. 10,663. CHARLES WINTON, 9, Station Road, Harlesden, near Willesden Junction. A new self-acting trap for preventing sewer-gas escaping from the drains into the atmosphere or into dwelling-houses, &c.

No. 10,706. WILLIAM ANDERSON, 24, Southampton Buildings, London. Improvements in apparatus for purifying water.

No. 10,754. JOHN WILLIAM DEAN, 37, Chancery Lane. An improved means of flushing closets with the waste water from sinks.

July 8.—No. 10,978. WILLIAM BARTHOLOMEW, of the Firm of B. Finch & Co., 11, Wellington Street, Strand, London. Improvements in baths.

No. 10,979. HENRY MUNDAY & HENRY WALKER, 28, Southampton Buildings, London. Improvement in flap valves for sewers or drains.

July 9.—No. 11,064. EDWARD ERNEST COUSINS, 6, Bream's Buildings, London. Improvements in fusible compounds suitable for the manufacture of drain-pipes, flushing-chambers, and the lining of conduits (Bertel Emil Olsen, Canada).

July 13.—No. 11,282. HENRY SCOTT, 15, Water Street, Liverpool. Improvements in and connected with securing terra-cotta, porcelain, and other tiles or slabs to surfaces.

July 16.—No. 11,377. GEORGE NOBES, 8, Quality Court, London. Improvements in fitting ships' and other closets with deodorising and disinfecting appliances.

No. 11,427. SAMUEL S. BROMHEAD, 97, Newgate Street, London. An adjustable ventilator for hats or caps.

No. 11,465. CHARLES E. GITTINS, 6 & 8, Eastcheap, London. Improvements in machinery for water softening and sewage purification.

July 20.—No. 11,595. GEORGE WALLIS ALLEN & HENRY J. A. BOWERS, 17, St. Ann's Square, Manchester. Apparatus for purifying water for economisers.

No. 11,596. EDWIN SYDNEY BARLOW, 17, St. Ann's Square, Manchester. Improvements in and in the construction of conduits for the passage of liquids.

July 22.—No. 11,645. ROBERT SCOTT, 168, Croydon Road, Newcastle-on-Tyne. Improvements in and connected with cisterns for flushing water-closets.

No. 11,787. HENRY CORNELIUS WILLINGS, 94, St. Paul's Road, Burdett Road, Mile End. Heating water for baths and other purposes (by gas), to be designated the "Excelsior" portable water heater.

July 24.—No. 11,798. CRESACRE GEORGE MOOR, 53, Chancery Lane, London. Improvements in the treatment of sewage for the purification thereof, and the production of valuable products therefrom.

July 25.—No. 11,817. CHARLES ROONEY HUXLEY, 34, Rosaline Road, Fulham, Middlesex. Ammoniated soaps.

No. 11,830. DONALD NOBLE, 323, High Holborn, London. Improvements in or relating to portable pumping apparatus for baths.

No. 11,831. JAMES HIGGINBOTTOM, 6, Lord Street, Liverpool. Improvements in or appertaining to the separation, deposition, and collection of dust or other suspended matter from air or the like.

July 26.—No. 11,904. EDWARD CUBBON, 156, Strand, Middlesex. Improvements in water-closets and the like.

SPECIFICATIONS PUBLISHED.—1888.

10,394. GILLAM. Soap, &c. 4d.
11,153. DOVE. Dust-bin. 6d.
13,061. CROSSLEY. Soap. 4d.
14,596. MCKEEMAN & PILLAR. Raising water-closet seats. 6d.
9,648. PHILLIPS. Trap gully. 6d.
10,153. HART & BAYNES. Corsets. 8d.
15,969. GOUGH. Water-filters. 8d.
9,857. BOWLEY. Soap. 4d.
17,654. GREEN. Street gully. 6d.

1889.

8,086. JUSTICE (WARNER). Corsets. 8d.
2,528. HUCKS. Centrifugally separating solids, &c. 8d.
940. SCHWARESCHILD. Closet paper. 6d.

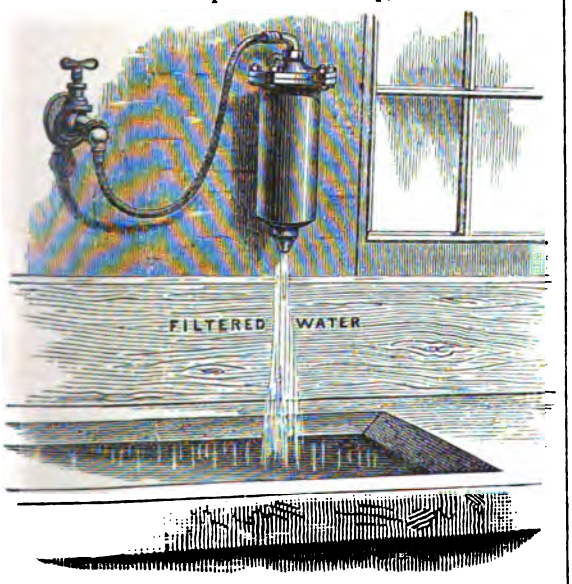
The above Specifications may be had from Messrs. Rayner & Cassell, Patent Agents, 37, Chancery Lane, at the prices quoted.

NEW INVENTIONS.

SLACK & BROWNLOW'S TAP-FILTER.

MESSRS. SLACK & BROWNLOW. of Manchester, have now issued a new catalogue of their filters for brewers and aerated water manufacturers, as well as for household use. The tap-filter, as shown in sketch, is designed to supply a long-felt want, namely, a filter which shall be portable and easily cleaned.

Each filter is supplied with 3 feet hose-pipe, and patent union which fits on the top, so that when in use water passes through the filter at a rapid rate; whenever unfiltered water is required from the tap, the main can be



disconnected, and the filter hangs on a nail on the wall. The outer case is made of cast-iron, tested for very high pressure, and all the fittings are of glass and block tin, so that water can receive no possible contamination from any crude metallic surface. Water first passes through specially prepared granular charcoal, and then through compressed charcoal blocks, so that every drop is doubly filtered—a very important consideration—and on this point the manufacturers base a special claim to efficiency.

The price is very low indeed, and it is quite within the reach of the poorest householder. Messrs. Slack & Brownlow have been awarded over fifty gold and silver medals and first prizes for the superior quality of their filters, which are now being shown at the Paris Exhibition.

LAW REPORTS.

SUPREME COURT OF JUDICATURE
(JULY 24).
COURT OF APPEAL.

Before the LORD CHANCELLOR, *the* MASTER *of the* ROLLS, *and* LORD JUSTICE LINDLEY.

EDWARDS *v.* SALMON.

THIS was an appeal by the plaintiff from the decision of Mr. Baron Pollock at the Bury St. Edmunds Assizes in an action brought for the recovery of a penalty of £50 under section 193 of the Public Health Act, 1875 (38 and 39 Vict., c. 55), which enacts that if any officer or servant of an urban sanitary authority shall exact or accept any fee or reward other than his proper salary, wages, or allowances, he shall be liable to a penalty of £50. The defendant was the Town Clerk of Bury, and as such acted as clerk to the urban sanitary authority of that district. In 1879, by a resolution of the town council, his salary was fixed at £365 per annum, which was to include all legal charges, except those for contentious business, travelling expenses, and payments out of pocket. In 1887, there having been an irrigation scheme for the district which had given the defendant a great deal of work, including a certain amount of contentious business, in October of that year the irrigation committee recommended that a payment of 500 guineas be made to the defendant for all his services in connection with the scheme. This recommendation was adopted and carried into effect by the town council, and the defendant signed a receipt stating that the payment was in full satisfaction of all his claims. The plaintiff, contending that this was an infringement of the Act, brought this action, which was dismissed by Mr. Baron Pollock.

Mr. Candy, Q.C., and Mr. Slee, for the plaintiff, contended that there was no authority to pay this additional sum to the defendant out of the money of the ratepayers. [The Lord Chancellor.—Who is the high-spirited individual who has brought this action?] He is the secretary of a ratepayers' association. Any person is entitled to sue for penalties. [The Lord Chancellor.—No doubt.] The town council cannot give him a present even for abnormal services. There was nothing fraudulent or dishonest in the arrangement, but this was not an allowance within the terms of the section.

The Court came to the conclusion that there was no ground for an appeal.

The Lord Chancellor said that in his opinion this was a frivolous and vexatious action, and that the appeal must be dismissed with costs. He would not pay such a case the compliment of expounding the section at any great length, because the facts in this case were far outside any possible construction of that section. The section prohibited any officer or servant of an urban sanitary authority from exacting or accepting any reward or fee other than his proper salary, wages, or allowances. The facts here were that the defendant's salary was fixed by resolution. Then work was undertaken by the town council which threw an unexpected amount of labour upon the town clerk. By a resolution of the proper authority, an extra sum was regularly and properly voted to him for this extra work. Then this public-spirited plaintiff sought to get from him a penalty of £50 and to disqualify him for life from serving the town council. The point of the section was the exaction of fees or rewards under colour of his office, and it did not in any way relate to the authoritative determination of the employer of the proper remuneration to be given for employment. It was clear that the urban authority had jurisdiction to fix this remuneration. "Allowances" did not necessarily mean gas, coal, and lodging, but obviously included extra payment for extra work, and this case fell exactly within it.

The Master of the Rolls concurred.

Lord Justice Lindley said that such an action and such

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an appeal could only have been brought by a common informer.

(*Before* Lords Justices Fry *and* Lopes.)

M'COLLA *v.* THE CLACTON-ON-SEA GAS AND WATER COMPANY.

This appeal from a decision of Mr. Justice Stirling raised a question of some public interest with regard to the remedy of a householder in case of the refusal or neglect of a water company to supply water to his house when requested to do so. The plaintiff is the owner of a house at Clacton-on-Sea, to which water was supplied by the defendant company. The supply was stopped during the winter months at the plaintiff's request, the house being then unoccupied. In June last the plaintiff, being about to occupy the house for a short time, desired to have the supply of water renewed, and he alleged that the defendants had improperly refused to supply him with water. He accordingly brought this action, claiming a declaration that he was entitled to be supplied with water for domestic purposes by the company at his house; damages for the refusal of the company to supply him; and an injunction to restrain the company from withholding such supply of water. The company had, in fact, given the plaintiff a supply of water before the case came into Court, so that practically at that time very little was at issue between the parties but a question of costs. On the plaintiff's moving for an injunction, Mr. Justice Stirling refused to grant it, on the ground that, by reason of section 43 of the Waterworks Clauses Act, 1847, and the decision of the Court of Appeal in the case of Atkinson *v.* The Newcastle and Gateshead Waterworks Company (2, Ex. Div., 441), he had no jurisdiction in the matter. Section 43 provided that—

If, except when prevented as aforesaid, the undertakers (that is, the persons authorized to construct the waterworks) neglect or refuse to fix, maintain, or repair such fire-plugs, or to furnish to the Town Commissioners a sufficient supply of water for the public purposes aforesaid, upon such terms as shall have been agreed on or settled as aforesaid, or if, except as aforesaid, they neglect to keep their pipes charged under such pressure as aforesaid, or neglect or refuse to furnish to any owner or occupier entitled under this or the special Act to receive a supply of water during any part of the time for which the rates for such supply have been paid or tendered, they shall be liable to a penalty of £10, and shall also forfeit to the Town Commissioners, and to every person having paid or tendered the rate, the sum of 40s. for every day during which such refusal or neglect shall continue after notice in writing shall have been given to the undertakers of the want of supply.

In the above-mentioned case the Court of Appeal decided that the penalty imposed by section 43 for the breach by a water company of their statutory duties mentioned in that section was the only remedy for the breach of duty, and that the person aggrieved could not maintain an action for damages against the company. The plaintiff appealed.

Mr. Costelloe was heard in support of the appeal. He endeavoured to distinguish the present case from the case referred to, on the ground that the present plaintiff claimed a declaration of his right to be supplied with water, and the action was not a mere action for damages.

The Court affirmed the decision.

Lord Justice Fry was of opinion that the case was governed by the decision in Atkinson *v.* The Newcastle and Gateshead Waterworks Company, the effect of which was that the penalty imposed by section 43 was the sole remedy given for the breaches of duty mentioned in that section. This Court was bound by that decision, and his lordship's mind went entirely with it. The plaintiff was, therefore, not entitled to come to the Court for a declaration of his right in a matter dealt with by section 43.

Lord Justice Lopes concurred.

HOUSE OF LORDS (July 25).

(*Before* Lord Herschell, Lord Fitzgerald, *and* Lord Macnaghten.)

LANCASHIRE AND YORKSHIRE RAILWAY COMPANY *v.* URBAN SANITARY AUTHORITY, MAYOR, &c., OF BURY.

This was an appeal from a decision of the Court of Appeal affirming an order of the Queen's Bench Division.

The Attorney-General, Mr. Henn Collins, Q.C., and Mr. W. Graham appeared for the appellants; and Sir C. Russell, Q.C., and Mr. R. S. Wright for the respondents.

The action was brought in April 1886 by the respondents, who are the urban sanitary authority of the borough of Bury, for the purposes of the Public Health Act, 1875, against the appellants, to recover the sum of £273 18s. 3d., for work done and materials provided in paving and flagging a railway bridge in Manchester Road, Bury. The question raised was whether under the 46th section of the Railway Clauses Consolidation Act, 1845 (8 and 9 Vict. c. 20), the appellants were liable to maintain the roadway of the bridge as well as the fabric of the structure in repair. The Courts below held that the appellants were liable to repair the road in question.

Their lordships, without calling upon the learned counsel for the respondents to argue the case, dismissed the appeal with costs.

Judgment affirmed and appeal dismissed with costs.

QUEEN'S BENCH DIVISION (July 29).

(*Before* Mr. Justice Day *and* Mr. Justice A. L. Smith.)

THE REGISTRATION OF CHARGES ON LAND.

This was an application of some importance with reference to the registration of charges on land, and the recent Act, the Act of 1888, the Land Charges Registration Act. That Act established a register of land charges, to be kept at the office of Land Registry, and then section 12 provides that a land charge created after the Act shall be void as against a purchaser for value of the land charged therewith, or of any interest in land unless and until such land charge is registered in the register of land charges, and it defined "land charges" as "a rent or annuity or principal moneys payable by instalments or otherwise, with or without interest, charged otherwise than by deed upon land, under the provisions of any Act of Parliament for securing to any person either the moneys spent by him or the expenses incurred by him under such Act; or the moneys advanced by him for repaying the moneys spent or the expenses incurred by another person under the authority of an Act of Parliament, and a charge under the 85th section of the Land Drainage Act, 1861, or under the 29th section of the Agricultural Holdings Act, 1883, but does not include a rate or scot." The question had arisen whether this enactment included moneys charged under the Public Health Act in respect of improvements, such as paving, &c. The question had arisen in Nottingham under these circumstances. The corporation, or the local sanitary authority, under the Public Health Act, had required certain improvements to be executed upon certain property in the town, and which, when executed by them on default by the owner, would be a charge under the Act on the property. The question had arisen whether the charge required to be registered under the above Act, and as the consequence of registration being required would be very serious, involving, it was said, the registration of about 650 charges a year in Nottingham alone, at an expense of over £1,000, the corporation desired to have the question raised and determined, and accordingly

Mr. R. S. Wright now moved, on the part of the corporation, for a rule for a *mandamus* to the Vice-Registrar to register the charge in question under the above statute, explaining that their only object was to have the question determined judicially and, as they hoped, by the refusal of the application, as the consequences of requiring registration of such charges would be very serious—in Nottingham alone involving probably an expense of over £1,000 a year (these charges being very numerous), and, moreover, the obligation, if it existed, would equally be applicable to all the sanitary authorities in England and Wales. The enactment, as he apprehended, was intended only to apply to charges in favour of "limited owners," tenants for life, and in respect of improvements effected by them on the property; but the terms of the enactment were so large that it had been doubted whether it would not include these charges under the Public Health Act,

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and hence the corporation desired to have the question raised and determined.

The Court granted a rule *nisi* for a *mandamus* to the Vice-Registrar.

HIGH COURT OF JUSTICE, CHANCERY DIVISION.—(August 2.)

(*Before* Mr. Justice Stirling.)

Mayor, &c., of Folkestone *v.* Downing.

This case raised a question of some importance, both to water companies and water consumers. It was a motion by the plaintiffs, the Mayor and Corporation of the borough of Folkestone, to restrain the defendant, who was the occupier of a house in the borough, from opening or breaking up the pavement in front of his house, for the purpose of attaching to the service-pipe, through which his premises were supplied with water, a screw-down stop-valve, and protecting such stop-valve by a cover and guard-box inserted in the pavement. The streets, highways, and pavements, &c., in the borough were vested in and under the control of the plaintiffs, and the defendant had given notice to the borough surveyor of his intention to do the work which the plaintiffs now sought to restrain. The plaintiffs contended that the only persons who had the right to open up the pavement were the Folkestone Waterworks Company, and that the defendant was, in fact, proposing to commit a trespass upon the property of the corporation, which they were entitled to have restrained by the order of the Court. The question depended upon the construction of various sections of the Acts of Parliament relating to the powers and rights of water companies. The principal Act was the Waterworks Clauses Act, 1847, section 28, which gave water companies power under certain superintendence to break up streets, &c., "and lay down pipes, conduits, service-pipes, and other works and engines." It had been decided in the case of the East London Waterworks Company *v.* Vestry of Bethnal Green" (Law Report 17, Q.B.D., 475) that the words "other works," included such works as the defendant proposed to lay down. Section 44 provided that the undertakers should, upon the request of the owner of any house in any street in which pipes should have been laid down by them, the annual value of which house should not exceed £10, lay down communication pipes "and other necessary works" for the supply of such houses with water. Section 48 provided that any owner or occupier of any dwelling-house who should wish to have water from the waterworks of the undertakers brought into his premises, and who should have tendered the water rate, might open the ground between the pipes of the undertakers and his premises, having first obtained the consent of the owners and occupiers of such ground, "and lay any leaden or other pipes from such premises to communicate with the pipes of the undertakers." Section 52 gave power to an owner or occupier to break up so much of the pavement of any street as should be between the pipes of the undertakers and his premises, "for any such purpose as aforesaid." By the Folkestone Waterworks Act, 1858, section 13, it was provided that the water company might make regulations for preventing waste of water, and by section 14 it was provided that all persons supplied with water by the company should provide proper ball or stop cocks, or other necessary apparatus for regulating such supply, and in case of neglect to do so, the company may cut off the supply of water. Section 6 of the Folkestone Waterworks Act, 1888, provided that the company might outside of and at or near the point at which the communication pipe for the conveyance into any premises supplied by the company entered those premises attach to that pipe a sound and suitable stop-valve of the screw-down kind, and every such stop-valve should be protected by a proper cover and guard-box, and the provisions of the Waterworks Clauses Act, 1847, with respect to the breaking up of streets for the laying of pipes should extend and apply to and for the purpose of inserting the said valves, covers, and guard-boxes. It was contended by the defendant that according to the true construction of the Acts, the words "other works" used in section 44 of the general Act ought to be read into section 48, and upon that construction he was entitled to open the pavement and do the work of which he had given notice to the borough surveyor.

Mr. Graham Hastings, Q.C., and Mr. Lewis Coward appeared for the corporation, and Mr. Buckley, Q.C., and Mr. Bramwell Davis for the defendant.

Mr. Justice Stirling said that an injunction must be granted in this case. The plaintiffs were the Mayor and Corporation of Folkestone, in whom were vested the streets in the borough, and they sought to restrain the defendant, who was proposing to open up one of the streets. The corporation said that that would be an act of trespass upon their property. The defendant, on the other hand, said that he had a legal right to do what he proposed under the Acts of Parliament, and that no danger would be incurred by the inhabitants of the borough. The question of danger did not arise. It was not an attempt to restrain a legal act which was likely to cause danger, but it was an attempt to restrain trespass upon the property of the corporation. The question was whether the Acts conferred upon the defendant a legal right to do what he claimed to do. If there was a serious question to be tried the injunction was a matter of course. His lordship was not now invited to dispose of the action, as was sometimes the case. He then proceeded to consider the construction of the various sections of the Acts of Parliament, remarking that he was not prepared to accept the contentions of the defendant with reference to section 48. At any rate, there was a serious question to be tried, and the corporation were entitled to the injunction which they claimed.

THE NORTHERN CIRCUIT.

Maintenance of Main Roads.

On July 23, at Manchester, before Mr. Justice Stephen, an action brought by the mayor, aldermen, and burgesses of the borough of Accrington against the Lancashire County Council was heard. This case was one of interest, as being one of the first arising out of the Local Government Act, 1888. Mr. Aspland, Q.C., and Mr. Aitken appeared for the plaintiffs; and Mr. Gully, Q.C., and Mr. Smyly for the defendants. The action was brought to recover the sum of £64 14s. 10d., being one-half of the balance of the expenses incurred by the plaintiffs in maintaining the main roads within the borough of Accrington for the year ending March 25, 1888, under the Highways and Locomotives Amendment Act, 1878 (41 and 42 Vict., c. 77), which by section 13 provides that certain roads shall be deemed to be main roads, and that one-half of the expenses incurred after September 29, 1878, "by the highway authority in the maintenance of such road shall . . . be paid to the highway authority . . . by the county authority . . . out of the county rate, on the certificate of the surveyor of the county authority . . . to the effect that such main road has been maintained to his satisfaction." Section 18 enacts that "every highway authority shall keep in such form as may be directed by the county authority a separate account of the expenses of the maintenance of the main roads within their jurisdiction, and shall forward copies thereof to the county authority." The total sum alleged by the plaintiffs to have been spent upon the maintenance of the high roads in question was £1,199 0s. 6d., and the portion thereof, repayable to them by the County Council was £599 10s. 3d., of which only £534 15s. 5d had been paid, leaving the balance sued for still payable. There were within the borough of Accrington 4 miles 5 furlongs and 155 yards of main roads. The plaintiffs duly sent in their account of the expenses of maintenance, and this account was accompanied by a statutory declaration (which Mr. Aspland submitted the defendants had no right to demand) to the effect that the amount stated had been properly expended on maintenance. The county auditor then attended, and, having examined all the vouchers, audited and certified the account; but when it

came to be paid the plaintiffs found, as already stated, that the defendants had made a deduction from it. Mr. Aspland now submitted that all the requirements of section 18 of 41 and 42 Vict., c. 77, having been complied with, the County Council had no power to go behind it and say, as they were saying, that the work might have been done more cheaply, and argued that the action must have been defended under a misapprehension of what the law was. Mr. Gully contended for the defendants that there was nothing in the Act of Parliament to show that their auditor's certificate was final and binding upon the defendants. On the contrary, if they considered that the amount charged for maintenance was excessive, or that sums were included under that head which really were not maintenance at all, they were bound in the interests of the public to decline to pay. In the present case they alleged that a much larger amount was included in the plaintiffs' account for scavenging than was reasonable. It was not denied that scavenging, as far as it was in the nature of repairs, was a proper item, but scavenging for the purpose of making the roads pleasant and wholesome was clearly not maintenance, and the defendants were not liable for it. Evidence having been called on behalf of the plaintiffs, his lordship decided that the defendants had not made out their case, and that the plaintiffs had by their evidence established at all events a *primâ facie* case in favour of their contention that the whole of the money included in the account had been spent on the maintenance of the roads; and he therefore gave judgment for the amount claimed.

Is Ensilage a Nuisance?

William Morgan *v.* St. Thomas Urban Sanitary Authority and the Justices of the Wonford Divisions.—Hon. B. Coleridge, M.P., appeared for the appellant (instructed by Mr. J. Edgel Searle, Crediton); Mr. Foote and Mr. Thorne for the respondent (instructed by Messrs. Friend and Beal, Exeter).

Mr. Foote said this was an appeal against a conviction of May 28 by the magistrates sitting for the Wonford Division for disobedience to a previous order of the court of summary jurisdiction, by which he was ordered to abate a nuisance. The order required the appellant to remove an accumulation of ensilage, or decayed grass, which order had not been obeyed, and for which the appellant had been fined £2 10s. or ten shillings per day for five days. The appellant was a farmer at Exwick Barton, near Exeter, and he was possessed of a lot of ensilage. He was a farmer of considerable extent, and he might have put his ensilage in many parts of his farm where it would be no nuisance, but it was placed upon a spot where it was a great nuisance to many people, especially to Mr. Snow, who resided at Weir Cliff House, close by. Therefore, after the proper steps had been taken the appellant was summoned before the magistrate on May 14, when they made an order upon him to remove the decayed grass, and asked him to pay the costs. Appellant took steps, but they not in obedience to the order, but rather defiance of it, because what the appellant did was to break up the stack and spread the ensilage in heaps as close to Mr. Snow's house and the highway as he could. The order of May 14 was not now appealed against, and Mr. Foote submitted that it was conclusive against Morgan, and that no matters under that order could now be re-opened.

Mr. S. Churchyard, surveyor to the St. Thomas Local Board and sanitary inspector, said he visited the appellant's premises at Exwick Barton on April 17. He found part of a stack of ensilage within a hundred feet of the highway. It was very offensive. The ensilage, which had been in a stack, was subsequently spread in fields east and west of Cliff House, the residence of Mr. Snow, and nearer the highway on the western side. The effect was to make the nuisance worse than before. Witness visited the farm on subsequent days, and found the smell still very bad. Heaps of ensilage remained, and other portions were scattered about the ground. The appellant occupied a farm of 350 acres, and could have placed his ensilage in a field nearly a mile from the highway.—Cross-examined: Witness was not aware of any business carried on in the district which gave out offensive smells. There used to be a tannery, but he had received no complaints concerning it. It had not come to his knowledge before that farmers in the district were stacking ensilage. He was not aware of any silos in his district except that of the appellant. It was not possible to deprive ensilage of its smell. Within a few hours of the order the appellant commenced to move the ensilage. It was a heavy, close substance, and witness believed that after nine or ten days' contact with the open air the smell would evaporate. Witness did not remember suggesting before the magistrates that the appellant should dig a hole in the ground and bury the ensilage. The ensilage was scattered over a piece of ground 150 or 200 feet in length. Could not say whether the better the ensilage the stronger the smell.—Re-examined: The appellant was fined for continuing the nuisance five days. The ensilage was so removed as to be a worse nuisance. It could have been removed within two days to a greater distance from the highway.

Mr. C. J. Vlieland, medical officer to the St. Thomas Urban Sanitary Authority, said the nuisance was greater after the ensilage was removed by the appellant and scattered over a field. The smell was perceptible from the highway and from Weir Cliff House, and in witness's opinion interfered with the comfort of those using the highway and living in the house. The smell was injurious to health.—Cross-examined: Mr. Snow complained that his wife had suffered from vomiting in consequence of the smell. One woman, however, who lived near the stack said she had never been better. Witness knew nothing about ensilage in general, and could only speak of this particular stack.

William Lake, gardener in the service of Mr. Snow, at Weir Cliff House, said on May 16 the appellant removed the ensilage from the rick, placing part of it in the marsh below Weir Cliff House and part in the field behind. Witness did not think that all the ensilage was removed. The smell was stronger after it was spread. Cross examined: Mr. Snow was gone abroad. The smell got less every day after the ensilage was spread. The manure witness used about the garden was quite as offensive as ensilage, but being a temporary thing people acquiesced in it.

Mr. Coleridge, M.P., in stating the appellant's case, said he thought that Court could not decide the greater question as to whether all stocked ensilage was a nuisance, because that was a question of enormous and increasing importance to farmers, and must be decided upon much more evidence than had been offered that day He hoped the Court's judgment, whatever it might be, would not settle that question. The appellant, not having appealed against the magistrates' original decision that his ensilage was a nuisance, could not go into that in its entirety. The question was whether the appellant obeyed the justices' order of May 14? No specific directions were given by the court below, but the general direction given on May 14 was to remove the accumulation within forty-eight hours. Appellant removed it in the best way he could. After seven days the whole thing was over, and the nuisance did not exist. Why, therefore, was the appellant further prosecuted, and the extreme penalty of ten shillings a day imposed? In removing the stack there was, for a time, a greater smell, but contact with the open air was necessary to evaporate that. Mr. Coleridge protested against the spirit which prosecuted people who honestly endeavoured to obey the law. Some heat of temper had been imported into this case.

A farm labourer named Coombe, employed by the appellant, said he distributed the ensilage over two fields, and the cattle ate it and fattened upon it. Dr. Brown, Exeter, said the acids generated by fermentation caused the smell. The quicker the evaporation the greater the smell for the time. The more ensilage was spread the quicker would its smell be got rid of. It had

no injurious effect on milk or health, except so far as it interfered with comfort. Dr. Rutherford, medical superintendent at Exeter Asylum, said they made silos on the farm close to that institution, and within a few feet of the road. Spreading the ensilage would, in witness's opinion, be the only mode of getting rid of the smell. Dr Woodman, medical officer of health for Exeter, gave similar testimony. In addition to spreading, the smell of ensilage might be got rid of by burying, but that, of course, would be an injurious process for farmers.

Mr. Coleridge, summarising the appellant's case, asked the Court to say that the stack was removed, as ordered, within forty-eight hours. The question was whether it was removed in such a manner as to be a nuisance or injurious to health. Mr. Coleridge contended that there had been no proof of ill-will on the part of the appellant against Mr. Snow, and that he could not have spread the ensilage elsewhere on his farm, as there was no water in other fields, or cattle to eat the ensilage.

Mr. Foote, in replying, pointed out that the appellant had not, in removing the ensilage, directed his man to spare anybody annoyance, or to do as well as he could. It was his duty to see that the order of the magistrates was carried out, and this the appellant had not done. The Court had not, in this instance, to consider the general question of the keeping of ensilage or its removal, but whether the appellant took the proper means to comply with the order of the magistrates to abate this nuisance within the time prescribed.

After private consultation, the chairman said upon the evidence which was before them, and which seemed not to have been before the justices below, the Court had arrived at the conclusion that the conviction must be quashed. No order as to costs would be made. The respondents intimated their intimation of appealing to a higher court.

A CARDIFF APPEAL CASE.

THE WAUNTREODA MANURE WORKS.—WHAT IS AN OFFENSIVE TRADE?

The appeal of the Cardiff and South Wales Manure Company against a decision of the Llandaff magistrates (see SANITARY RECORD for June 20, No. 381, page 608) was heard at the Glamorganshire Quarter Sessions on July 5 and 6 (before Mr. J. C. Fowler and Mr. Walter Smythe). Mr. Arthur Lewis (instructed by Mr. R. W. Williams) was for the rural sanitary authority, who were the complainants before the Llandaff magistrates; and Mr. David Lewis (instructed by Messrs. Morris and Son) for the appellants.

Mr. Arthur Lewis said that the notices were admitted, therefore it devolved upon him to open. The company appealed against two convictions by the justices of the petty sessional division of Llandaff on May 20. The summonses were issued under section 112 of the Public Health Act of 1855, which read as follows:—

> Any person who after the passing of this Act establishes within the district of any urban authority without their consent in writing any offensive trade—that is to say, the trade of blood boiler or bone boiler, or fellmonger, or soap boiler, or tallow melter, or tripe boiler, or any other noxious or offensive trade, business or manufacture shall be liable to a penalty not exceeding £50.

There was another penalty of so much per day for each day that such business or manufacture was continued, but the summonses in this case were issued simply for the establishment of a noxious business or manufacture without the consent in writing of the urban sanitary authority. One of the summonses was issued in respect of meat boiling, which the respondents submitted was a noxious and offensive business within the meaning of the section. The other summons was for bone steaming, which he contended was tantamount to bone boiling. The meat boiling was established in November 1888, and the bone boiling in February 1889. The grounds of appeal were, with regard to the first summons, that meat boiling was not a noxious or offensive trade within the meaning of the section, and that the conviction was against the weight of evidence. With regard to the second summons. the company stated that bone steaming was not bone boiling, that it was not a noxious trade, and that the conviction was against the weight of evidence. There was no question in this case whether a nuisance was created or not, for this reason, that supposing the company had obtained the consent of the rural sanitary authority to the establishment of a noxious or offensive trade that would not protect them if they caused a nuisance. The company had obtained from quarter sessions a licence for slaughtering horses, but that of itself was not a very lucrative business. The carcases were, therefore, cut up, the meat boiled, and the bones steamed; after which they were ground and turned into artificial manure. Mr. Lewis remarked that two applications for a licence for bone boiling had been made to the rural sanitary authority and had been refused without hesitation.

Mr. David Lewis: The licence was refused by one vote only, the numbers being eight against seven.

Mr. Harris, clerk to the rural sanitary authority, produced the minute-book, and put in the correspondence which had passed between the authority and the appellants.

In cross-examination, he said that when consent to the establishment of the works was refused, it was after an animated discussion of about three-quarters of an hour.

Alderman Waring, who visited the works on June 21 last, described how the process of meat boiling and bone steaming were carried on. There was an exceedingly strong and offensive smell between 150 and 200 yards on the leeward side of the works.

In cross-examination, he stated that he lifted the lid of one of the meat boilers and the steam escaped. There was no escape when the lid was closed. The vessels in which the bones were steamed were hermetically sealed. An open boiler would give off effluvia, but he did not say that any effluvia escaped from the vessel in which the bones were steamed, except when it was emptied. There was a disgusting smell about the whole of the premises.

Mr. John Gash stated that he had been in the horse slaughtering and manure trade for thirty years, and for fourteen years he had carried on business at Canton. The only difference between bone boiling and bone steaming was that in the latter process more fat was taken out of the bones. The machinery and plant at Wauntreoda was exactly the same as he sold to the company. When the bones were taken out of the steamer there was a very strong smell created which could not be avoided.

What use did you make of the meat? Was it made into sausages?—I sent the good meat to London, and what was bad I threw to the manure heap.

What was it sent to London for?—For cats or dogs.

Only for cats and dogs? Was it not used for human food?—I don't know.

You mean that they did not recognize it on your table in the form of sausages?—No.

You never asked what became of it?—No.

Mr. William Frazer, surveyor and inspector of nuisances to the rural sanitary authority, proved certain plans, and in cross-examination said that the improvements in the works which he suggested were carried out, and he subsequently reported that no nuisance existed except what might be expected from the nature of the trade under the most favourable circumstances.

Mr. Vacher, the medical officer of Birkenhead, stated that he was well acquainted with noxious trades. He visited the works on the previous day. They were not in operation. He did not consider that the method of deodorising the steam from the boilers was effective, and the ladling out of what he termed "horse soup" must be very offensive.

This was the case for the rural sanitary authority.

Mr. David Lewis addressed the Court on behalf of the appellants, pointing out that bone boiling and bone steaming were two entirely different processes. If he proved that the only question was whether bone steaming was a noxious trade, and it was necessary that they should have something more than hypothetic evidence on the point. The guardians refused to sanction the

works because they objected to any business of the kind being carried on in their district, and he asked the Court not to strain the law against trade. Not one person living in the neighbourhood had been called to say that any offensive smell existed in the neighbourhood of the works.

Dr. Francis Bond, medical officer of health for the Gloucester combined sanitary district, said he visited the works on June 24, when the usual operations were carried on. He did not find any offensive smell except in one corner where there was manure. The boiling meat was not more offensive than cooking in one's house. There was a very great distinction between bone boiling and bone steaming.

In cross-examination he stated that the boiling of meat would be very much the same as the boiling of tripe.

Dr. Wallace and Dr. Hardyman stated that they had visited the works on several occasions, and had found no offensive smell outside the premises.

Mr. W. V. Huntley, chairman of the appellant company, stated that about £2,000 had been laid out at Wauntreoda, and he believed the works were properly constructed. He had visited the works repeatedly.

Mr. David Lewis put a question as to whether the meat boiling and bone boiling created a nuisance, when

Mr. Arthur Lewis objected. He contended that evidence tending to show the way the business was carried on did not constitute a nuisance was not admissible, because, whether there was a nuisance or not, the appellants had no right to establish a noxious trade without the consent of the authority.

After a long argument, the Court ruled that on the conviction for steaming bones evidence as to a nuisance was not admissible, but in regard to meat boiling it was receivable.

Mr. Arthur Lewis said that in that case he would ask to be allowed to call rebutting evidence.

Mr. Huntley, continuing his evidence, said there was no offensive smell outside the works. No decomposed horses were taken on the premises. All the meat was sent away by the Great Western Railway to London.

Mr. Arthur Lewis: And comes back in sausages.

Mr. L. Harrison, goods foreman, employed by the Great Western Railway Company, said the meat was sent away in open crates, and was always in good condition.

Mr. Harpur, borough engineer, Cardiff, said he had visited the Wauntreoda Works. There was nothing offensive outside the premises, but there was a slight smell inside. He had noticed a worse smell when pickled beef was being boiled. He could eat his dinner in the boiling house.

Mr. Charles Moir, veterinary surgeon, said the works were suitable for the business carried on, and there were no noxious smells outside.

Inspector Greenwell, R.S.P.C.A., gave similar evidence.

Messrs. W. Treseder, Charles C. Jones (architect), Jenkins, Frank Blake, Thomas Lewis, and Henry Shapland gave evidence as to the non-offensive nature of the works.

Mr. Arthur Lewis then asked permission of the Court to call rebutting evidence, and Mr. David Lewis objecting, a long legal argument ensued, the result being that rebutting evidence was not allowed. Mr. Arthur Lewis asked the Court to take a note of his contention, which was done.

Mr. Fowler intimated that the Court had already agreed that the steam process of treating bones was, in their opinion, substantially different from bone boiling, and that it might be carried on in the way described without any noxious results, and they thought the conviction on that point could not be sustained.

Mr. Arthur Lewis then addressed the Court on the whole case. Notwithstanding the intimation of the Court with reference to bone steaming, he endeavoured to show that it was practically the same as bone boiling, for which the consent of the rural sanitary authority was required. As regarded the meat boiling, he pointed out that, according to the evidence for the appellants, tripe boiling was not more offensive than meat boiling, and that tripe boiling was a noxious or offensive trade mentioned.

The Court found that bone steaming was not bone boiling, as stated in the conviction, and that such conviction cannot be supported. In regard to meat boiling, the Court found that it was an offensive trade, and the conviction was sustained.

Mr. David Lewis asked the Court to state whether they found that meat boiling was an offensive trade, because it was like tripe boiling, or that meat boiling, as carried on at these works, was noxious or offensive. What he wanted were the grounds upon which the Court gave its decision.

The Chairman said it was not at all necessary to give any further definition. The Court found that meat boiling was inevitably an offensive trade, and should be under the control of the sanitary authority.

Mr. David Lewis: Do I understand that you decide that the boiling of horse-flesh is offensive *per se*.

The Chairman: We find upon the evidence that it is an offensive trade.

Mr. Arthur Lewis asked a question as to the costs.

Mr. Fowler replied that the costs, in his opinion, should be equally divided.

POLICE COURT CASES.

SALE OF FOOD AND DRUGS ACT (1875).

Cheap Milk.

Thomas Hunt, milk dealer, Victoria Street, Wednesbury, was summoned for selling milk not of the nature and quality demanded. Mr. Morris (the inspector under the Sale of Food and Drugs Act) stated that on June 11 he caused a half pint of milk to be purchased from a boy in the employ of the defendant. The boy shouted "a penny a pint new milk," being ½d. per quart less than most dealers sold it. Upon the milk being analysed, it was ascertained that a portion of the cream had been extracted. The defence was that the milk was sold in the same condition as when received from the dairy. A fine of 20s. and costs was imposed.

Adulterated Pepper.

Eleanor Vickars, shopkeeper, Short Acre, Birmingham, was found guilty of having sold pepper which was adulterated with 25 per cent. of ground rice. She said she had bought the pepper from a travelling dealer, but would not do such a thing again. Sanitary Inspector Harries, at whose instance the proceedings were taken, said he believed her statement was correct. Fined 5s. and costs.

Adulterated Milk.—Heavy Fine.

The magistrates sitting at the Exeter Police Court had before them a case in which Lewis Ham, a dairyman and greengrocer, was charged with selling milk not of the quality and substance demanded by the purchaser on July 4. Mr. G. R. Shorto, town clerk, appeared to prosecute on behalf of Mr. Wreford, the inspector under the Food and Drugs Act appointed by the Council, and in opening the case, said the proceedings were taken out under the 6th section of the Adulteration of Foods Act, which provided that no person should sell to the prejudice of the purchaser any articles of food which was not of the nature, substance, and quality demanded. In the present case Mr. Wreford asked defendant for a pint of raw milk, and he was supplied with an article which the certificate of the Public Analyst for the City of Exeter (Mr. Frank P. Perkins) showed to be adulterated with not less than 20 per cent. of water. The penalty for the offence was not exceeding £20.—Mr. Shorto then called Mr. Wreford, who stated that on the date mentioned he saw the defendant in Magdalen Street, delivering milk to customers at their houses. Witness asked him for a pint of raw milk, and he obtained this from him, paying him 1½d. for it, which was the ordinary market price of raw milk. He informed him that it was his intention to have it analyzed, and he

thereupon divided it into three parts giving one sample to the defendant, one to the public anlayist, and keeping one (produced) himself. Witness produced the certificate of Dr. Perkins.—This was the case for the prosecution.—Defendant, in defence, stated that he kept no cows himself, but purchased his milk from farmers, and sold it exactly as he received it. He would swear that the milk purchased by Wreford was sold to him in exactly the same condition as he (witness) purchased it.—The Chairman: Are you prepared to swear who supplied you with the milk? Defendant: Yes, sir; Mr. Sclater, of Heavitree Bridge, was supplying me at the time of the offence.—The Chairman: It has been stated again and again that that does not relieve the responsibility as far as you are concerned. You will have remedy in another court.—Mr. Shorto: The man who purchases milk to sell again may obtain a warranty from the person from whom he purchases it as to its purity. If defendant had done this he may have produced his warranty here.—Defendant: I was not aware of that.—The Chairman: It is a very serious offence, especially as regards infants. You are diminishing their nourishment to the extent of one-fifth, and it must be stopped. We shall fine you £4 and the costs, or 14 days.

MARGARINE ACT (1887).

Selling Margarine without its being Labelled.

Mary Dunne, carrying on business as provision dealer, at 26, South King Street, Dublin, was prosecuted at the instance of Mr. David Toler, inspector of food, for having, at the address named, exposed for sale by retail a quantity of margarine, to which there was not attached a label so as to be clearly visible to the purchaser, a label bearing the word "Margarine," in letters not less than one and a half inches square. A fine of £5 was imposed. Mr. J. M'Sheehy prosecuted on behalf of the Corporation. Ellen Rock, 57, Meath Street, was also prosecuted by Inspector Toler for having on May 27 last exposed for sale a quantity of margarine as butter, there being no label to denote the contrary. Inspector Toler gave evidence to finding in defendant's shop, on May 27, a lump of what appeared to witness to be margarine, unlabelled. Sir Charles Cameron certified that the sample handed to him by Mr. Toler was not butter but fats prepared in imitation of that article. Mr. J. M'Sheehy prosecuted. Mr. Ennis appeared for the defendant. A fine of £5 was imposed.

PUBLIC HEALTH ACT (1875).

Removal of Nuisances.

At Westminster, Mr. Edward Arnold, trading as Arnold & Stone, the occupier of premises known as the Chelsea Walk, Lot's Road, Chelsea, was summoned by the Vestry of Chelsea for causing a nuisance by keeping a large accumulation of manure thereon. Mr. C. Pemberton appeared for the Vestry; and Mr. Besley, with whom was Mr. Bodkin, appeared for the defendant. The case, which it was admitted was one of a test character, had occupied the greater part of several afternoons. The defendant is a manure merchant, and his contention by counsel is that his business, not being one scheduled by Act of Parliament as "an offensive trade," cannot be interfered with by the Vestry, because at this season of the year, owing to the occupation of farmers and the difficulty of obtaining barges, there had been a larger and longer accumulation on the wharf than at other periods. Mr. d'Eyncourt, in the course of an exhaustive judgment reviewing the facts and arguments, said that it was proved that the accumulation of manure on the wharf was from 180 to 200 cubic yards. This was within 90 yards of houses. There was a difference of opinion between the medical experts who had given evidence in the case, but he (the magistrate) had come to the conclusion that the heap of manure was a nuisance, and its actual removal must necessarily be very offensive. It might be true to some extent that the trade could not be carried on unless the practice of the defendant was allowed, but with this he (Mr. d'Eyncourt) had nothing to do. The manure taken to the wharf should be at once carted into barges, and this was only a matter of expense. He made an order for the abatement of the nuisance and awarded the Vestry five guineas cost. Mr. Besley said that as a matter of fact the accumulation had been removed, but the defendant would continue his business as usual. He would prefer an order of prohibition, so that there could be an immediate appeal to the Quarter Sessions. Mr. Pemberton observed that if the nuisance recurred there would be a fresh prosecution, and then a prohibition order would give the desired opportunity of appeal.

Over-crowding.

George Plume, owner, and Daniel Bryan, occupier, of No. 6, Salutation Alley, Woolwich, were summoned for over-crowding. Sanitary Inspecter Carty said that Bryan and his wife, their married daughter, and her two children lived and slept in one room, 12 ft. by 10 ft. in width and 8 ft. high. These measurements gave a cubic capacity of 960 ft., whereas the five inmates, counting as four adults, required by law 1,600 ft. He had given notice both to the Bryans and their landlord, but the people were still living there under the same conditions and in a wretched, dirty state. An agent who collected the rents attended on behalf of the landlord, and said that he was unaware of the over-crowding. Mrs. Bryan answered the other summons, and was called as a witness, when she said that her daughter and children had been living with her and her husband in the one room for six months. The magistrate also elicited that there were eight rooms in the house all let out in tenements. Mr. De Rutzen: In such cases as this the persons to blame are the landlords, who screw every penny possible from the poor tenants and let them live in a state unfit for dogs. I fine Mr. Plume £3, and the other summons will be withdrawn.

A Recalcitrant Owner.

William Peters, farmer, &c., South Holmwood, was summoned for refusing to comply with the orders of the Dorking Rural Sanitary Authority remitted to him on May 20 last, requesting him to abate certain nuisances arising from the want of proper drains and cesspools on premises of which he was the owner. The defendant pleaded not guilty, and stated that the remedies the authority suggested were worthless and unpracticable. Mr. George Scales (Clerk to the Rural Sanitary Authority) appeared to support the charge. William Rapley, inspector and surveyor of the Rural Sanitary Authority, said he had inspected the defendant's premises, and found that at each cottage there was a sink, but no drains in connection with the same. While there he also saw one of the tenants emptying some sewage into a ditch which ran in front of some of the neighbouring cottages. This ditch already contained a quantity of sewage, the smell of which was very offensive. In reply to the defendant, witness said he did not know that sewage ran into the ditch from property above the cottages. Dr. E. L. Jacob, medical officer, confirmed the evidence of the inspector. He thought the only way to remedy the nuisance was to drain the premises as the sanitary authority recommended. Defendant deposed that he had experimented with a cesspool some years ago, and had found it a complete failure. The occupiers filled the cesspools, but failed to empty them. He received several notices from the sanitary inspector to abate the nuisance. He then filled in the cesspool, and determined not to make another. He should not made any cesspools there again, but if the inspector built them and charged him with the expense he would pay it, and when the nuisance arose again he should summon the inspector for causing it. The Chairman said there was not the least doubt that these cottages were not properly drained. The Bench were of opinion the nuisance existed, and they would, therefore, make an order for the order of the sanitary authority to be carried out within twenty-one days. There were five other charges of a similar nature against the defendant. These were separately heard, and in each case the Bench made a similar order. Defendant said he would not carry out the recommendations of the authority.

Bad Meat Cases.

At the Exeter Police Court, Robert Hodge, a butcher, of Fore Street, was summoned for having in his possession the carcase of a sheep which was unfit for food.

Mr. Wreford, inspector of nuisances, said from the appearance of the carcase itself he was of opinion it was unfit for food. It was dressed in the usual way, with the exception that the fore legs were not skewered up. He seized the carcase. It was examined by Mr. Heath and Dr. Harris, and it was ordered to be destroyed.—Cross-examined by Mr. Friend: If the animal had the gripes or the wind it would probably cause the discolouration. The sheep was a very fine one.

Mr. Heath said he had examined the intestines and carcase of the sheep. Death was due to suffocation and congestion of the bowels and lungs. He had known ten sheep die on one farm in a week from the same complaint, which was brought on by indigestion. The sheep was unfit for food, but witness thought it may have been in good health a few hours before he saw it. The discolouration would occur from a sudden illness.—In cross-examination Mr Heath said he might have made use of the expression that "Mr. Hodge was not to blame," to Mr. Wreford. The meat was very good, and witness would not have taken the responsibility of seizing the carcase if he had not seen the intestines. It was expedient to skin a sheep as soon as possible, as more money was obtained then for the skin. If he had seen the animal suffering he should have punctured its side and relieved it, and it would have been fit for food afterwards.

Mr. Harris, surgeon, Exeter, and one of the assistant medical officers of health, was distinctly of opinion, after he had examined the sheep, that it was unfit for food. The carcase had been prepared in the usual way for food. If he had seen the carcase apart from the intestines, he should have noticed it was unusually red, and unfit for food.

The Chairman said the Magistrates had no difficulty whatever in deciding that the carcase was unfit for food, and the Act requiaed that the intention of preparing, or the non-intention of preparing the same for food should be proved by the defendant. They could not but think that there was an intention to prepare the sheep for food, but there were extenuating circumstances connected with the case, and they were ready to believe that up to the time of the death of the animal the defendant was ignorant that there was any disease. Yet, at the same time, the magistrates had to be careful to strictly observe the law, and therefore they could not but convict the defendant of what might be called a technical offence. Taking the mitigating circumstances into consideration, the Bench had decided to inflict a fine of 20s. and costs, in all £2 12s. 6d.

At the Exeter Police Court, John Whiteway, butcher, of Paris Street, was summoned for having in his possession half a carcase of lamb, which was then unfit for food. Mr. Shorto (Town Clerk) prosecuted, and Mr. Orchard defended. Mr. Shorto said he appeared for Mr. Wreford, the Inspector of Nuisances. Mr. Wreford knew that the lamb previously belonged to a Mr. Bowden, of Woodbury, who sold it to Mr. Whiteway, as during the morning in question he saw it in Mr. Bowden's possession, and acquainted him that it was unfit for food. Mr. Whiteway gave a most absurd price for the lamb, the usual price being about 15s., whereas he gave only 5s. Whiteway had the lamb killed, offered a part of it for sale to his customers, and the other part hung in his shop. Defendant was liable to a penalty not exceeding £20, and he asked their Worships to mark their sense of this case by inflicting a fine that would ensure the safety of customers from purchasing meat that was totally unfit for human food. Mr. Wreford, Inspector of Nuisances for the city of Exeter, said from information he received on Tuesday last he went to the shop of the defendant in Paris Street. He there examined a portion of lamb hung up in the shop. It was half a carcase and the right side. It was dressed and hung up behind a door leading into a passage. After having inspected the lamb, he came to the conclusion that it was totally unfit for food. He left his assistant in charge, and immediately sent for Dr. Bell and Mr. Heath. Whilst Dr. Bell and witness were in the shop defendant came in, and, in reply to certain questions, said he had purchased the lamb for 5s. Defendant afterwards said Mr. Bowden let him have the carcase to do his best with it. Cross-examined by Mr. Orchard: His opinion was that the lamb was diseased and unfit for food. The lamb was very small and thin. He saw some of the lamb in defendant's cart, which he was selling to his customers. Dr. Bell, Assistant Medical Officer of Health, said he examined half a carcase of lamb in Mr. Whiteway's shop. He saw it was unfit for food, because its condition was very wet. The lungs were congested, and the whole lamb was quite unfit for human consumption. Mr. Whiteway said he only gave 5s. for the animal, as it was suffering from a bad cold. Cross-examined by Mr. Mr. Orchard: He certainly thought that the lamb when slaughtered had inflammation, and was also diseased. The meat was wet and flabby. The liver and the intestines could not be found. Mr. Heath, veterinary surgeon, said he had examined half a carcase of lamb, at the instance of the Inspector of Nuisances. The animal, he should say, was in fair store condition, and neither fat nor lean. The meat was damp and flabby, and not at all wholesome. On examination he found the lungs were affected with pleurisy, which alone would make it decidedly unfit for food. The other half of the lamb, when he saw it, was cut into proper butcher's joints. He gave the meat to his dogs, and that was all it was fit for. Cross-examined by Mr. Orchard: Animals at this time of the year were subject to pleurisy. The body had been blown. Mr. Westron: How was the body blown? What kind of air was blown into it? Mr. Heath: The air from the butcher's lungs. Mr. Heath, continuing, said an experienced butcher would easily detect that the lamb was diseased. Mr. Shorto: Now, what would have been a fair market value of a lamb like the present one? Would five shillings have been a fair price? Mr. Heath: Certainly not. The lamb if it had been in a proper state would have been worth about 15s. The lamb was not fit for the butcher at all; it was far too small. The Chairman of the Bench said they were satisfied that the defendant had offered meat that was diseased and unfit for human food for sale. The case was one of considerable importance, as defendant must have known by the price he gave for the animal that it was not a good one. He would be fined £2 10s. and the expenses—£3 19s. 6d. or 14 days' imprisonment in default.

Robert Bowden, a farmer, of Greendale, Woodbury Salterton, appeared at the Exeter Police Court, before Mr. J. Knapman and other magistrates, in answer to a summons charging him with unlawfully aiding and abetting Alfred Whiteway, a butcher, of Paris Street, Exeter, to deposit and expose for sale for the food of man a carcase of a lamb which was unfit for such food, and which has been seized and condemned. Mr. G. R. Shorto (town clerk) appeared to prosecute on behalf of the inspector of nuisances and foods and drugs for the city (Mr. Wreford), and Mr. W. Brown represented the defendant.

Mr. Shorto, in opening the case, said the prosecution was taken under the 5th section of the 11th and 12th Victoria, chapter 43, and the aider and abettor was liable to the same penalty as the actual offender. At a previous Court, Alfred Whiteway was charged with having on his premises, exposed for sale for the food of man, half a carcase of lamb which was unfit for food, and the defendant was now charged with aiding and abetting in such exposure for sale. He then called Mr. Wreford and Mr. Whiteway.

The latter stated that he gave the defendant 5s. for the whole carcase, which weighed about 20 lb. Subsequent to his purchasing it defendant came to him, said the inspector had been inquiring after the lamb, and asked him to let him have the side, as he wished to take it to Mr. Heath for examination.

The Chairman: It must have been apparent that there

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was something the matter with it, if you bought it for 8d. per lb.

Mr. Whiteway: It is always our place to buy it as cheap as we can.

The Chairman of the Bench said that the charge was a very serious one, and the citizens must be protected in a matter of such great importance. It most affected the health of the city. Defendant was the first person who had been tried in that Court as an aider and abettor, and if he had not been, it would not now have been a question of fining, but one of imprisonment. The Bench would have dealt very strongly in the matter. As it was the first case, however, he would only have to pay a fine similar to that which Whiteway had paid, viz. 50s. and the expenses. He hoped that this would be a caution to others, and show people that they cannot send diseased meat into the city without escaping punishment. He added that the next offender would be sent to prison without the option of a fine.

At the Manchester City Police Court, Thomas Wilson, a butcher, of 83, London Road, was charged under the Public Health Act with having a quantity of diseased meat exposed for sale in his shop. Mr. J. Page, superintendent of the markets department of the Manchester Corporation, prosecuted. On the morning of July 14, Inspector Atkinson was called by a police officer to the defendant's shop, which was then open. He found in the shop half of the carcase of a cow, partly in joints and partly in small pieces. The remainder of the carcase was in the yard at the back of the premises. The whole of the flesh was in a very advanced stage of disease. There were in the shop other pieces of meat which, although poor and thin, were not diseased. The diseased pieces were afterwards examined by Mr. Edwin Faulkner, veterinary surgeon, and they were subsequently taken before a magistrate and ordered to be destroyed. Mr. Faulkner stated that his examination of the carcase showed that the animal was what was known as a "piner" or "waster." It had been suffering from tuberculosis, a contagious disease, and from degeneration of the muscular tissues. The animal had evidently been killed to keep it from dying on the owner's hands. People who ate flesh in this state of disease were likely to catch the disease. The total penalty to which the defendant could be subjected was £1,800, as there were so many pieces of meat. The Chairman said it was a very bad case indeed—one of the most serious which had come before them. The defendant had been selling to poor people meat which was most likely to spread disease amongst them. They would inflict a penalty of £20 and costs, with the alternative of two months' imprisonment. The defendant might think himself fortunate that he had got off so lightly.

CONTAGIOUS DISEASES (ANIMALS) ACT, 1878.

At the Barnstaple Police Court on July 22, Richard Wadland, farmer, of Roborough, near Torrington, was charged on the information of the Inspector of Nuisances for the Borough of Barnstaple, that on June 3 in the parish of Barnstaple he caused to be carried certain diseased animals, to wit six diseased pigs, on the highway in the Borough of Barnstaple, contrary to the Contagious Diseases (Animals) Act, 1878. Mr. Bosson prosecuted, and Mr. Friend of Exeter was for the defence. In introducing the case Mr. Bosson said the offence was committed under the Act, 1878, and the fine was £20 in respect to a number of animals up to four, and above that number £5 each. In the Act it was provided that Orders of Council should be included in the Act, and under an Order issued on September 21, 1886, it was made an offence to convey animals affected, among other things, with swine fever. It was under that order that the present proceedings were taken. The defendant pleaded "not guilty." Mr. Friend said he would admit the carrying of the pigs over the highway.

Frederick Chanter, butcher, of Barnstaple, deposed that on the last Monday in May he went to Mr. Wadland's farm and agreed to buy seven pigs, for which he was to pay £19. So far as he could see the pigs were then perfectly healthy. They were to be delivered on Monday June 3. He had not paid anything in respect of the pigs. He next saw the animals at the slaughter house on Monday, June 3, at 12.15. Four were then killed, and the slaughterman, Knill, was scalding the first pig. He could not see anything particular the matter with the four killed pigs until he opened them. On opening the first one he found congealed blood inside the hind leg. He could not say what was the matter, and he sent for Mr. Penhale. It was very unusual to find congealed blood in this manner. The carcase that was sent by Mr. Wadland was in his shop, but on discovering there was something the matter with the others, he had it sent down to the slaughter-house. By Mr. Friend: He had been in the business nine years, but had no knowledge of the nature of swine fever. He had never before seen a pig affected with swine fever. When he saw the pigs at Mr. Wadland's there were two animals in the stye besides the ones he bought; one of the two was already sold and the other was not fat enough for witness. If the two were quite healthy he should say it would be a considerable guide for the owner with regard to the others. On the Monday in question he was putting his horse in the stable when the slaughterman asked him if he had seen the pigs which had come for him as one of them had died. He at once went to the slaughter-house. The mark on the slaughtered pig's leg was just such a mark as he should expect to see from a bruise. The day was a very hot one, and he should think it exceedingly unwise for a farmer to have sent pigs which he thought to be diseased on such a long journey. The way in which they were sent was the very way to invite inspection and court detection. He saw the animals twice the day he bought them, and they were quite sound, or he would not have bought them. By the Bench: He gave £19 for the pigs, which was the market price. Mr. Wadland first wanted £22.

William Garland, Inspector of Nuisances (Barnstaple), said on June 3 his attention was drawn by Mr. Chanter to the condition of pigs in the slaughter-house. When he got to the slaughter-house there were five dead and two living, four of the dead ones having been recently slaughtered. He examined the carcases and the entrails; they were far from healthy. He did not know what was the matter with them, but he found a large ulcer on a part of the stomach. He had never before seen swine fever.

William Knill, slaughterman, stated that he had charge of the slaughter-house. He was there on June 3 when the waggon arrived with Mr. Chanter's pigs. One of them was dead and three of the others were almost gone. He got them out of the waggon immediately and "stuck" them. When he commenced to dress them, he saw there was something wrong. He had never seen pigs like it before. Later on the same day Mr. Wadland came to the slaughter-house, and witness heard him say he was surprised to hear that it was not the small one that was dead. There were two smaller than the rest. It was the next to the smallest that was dead. Mr. Friend asked whether Mr. Wadland did not say that he should not have been surprised if it was the little one that was dead? Witness said it was something like that. He should not think the small pig was trampled to death by the others; he saw no marks to indicate this. It might have got under the others. The driver told him he had come along step by step. In reply to Mr. Friend, witness said there was no attempt to conceal the pigs. The smallest animal was crippled in its hind legs. He did not notice that any of the other animals were crippled.

William Penhale, M.R.C.V.S., of Barnstaple, said he had been in practice in the town for fifteen years. On June 3 he inspected the pigs concerned at the slaughter-house. They were all affected with swine fever, but the disease was not of long standing, although very well marked. In his opinion the disease had only shown itself

for a few days, but as soon as fever showed itself, it was apparent to an ordinary observer that the pig was ill. He knew Mr. Wadland; he sent for witness three years ago when the pigs on his farm were suffering from an attack of swine fever, and were killed. Cross-examined: Mr. Penhale detailed the symptoms of swine fever, and said they were very varied indeed. It was possible that though Mr. Wadland had seen swine fever once, he might not again recognize it. Mr. Friend asked whether, if the pigs were lively and happy in their stye, when sent away it would not throw the owner off his guard? Mr. Penhale: Yes; if they were apparently healthy, but there was a brash inside the shoulders which might have been seen easily. In reply to Mr. Bosson, witness said it was quite possible for some pigs to escape swine fever, even if with others. All pigs did not take it. Pigs kept running out-of-doors were less liable to it than pigs kept indoors.

In opening the case for the defence, Mr. Friend said in the case of his client there had been no design or desire whatever of the kind. Whatever took place on June 8 was to him unknown in the foundation, and unexplained. The defendant was charged with a criminal act, and before their worships could convict they must be satisfied that he had a criminal mind.

The Bench drew Mr. Friend's attention to a sub-section of the Act, which provided that a conviction should follow if the Bench was satisfied that the defendant might by reasonable diligence have obtained knowledge.

Mr. Friend said they would hear from the lips of the defendant himself that there was nothing in the appearance of the animals to indicate any form of disease, and unless such appearances were visible it was hardly to be expected that a man would send for a veterinary. Although the defendant was presumed to have knowledge, he thought the Bench would hardly like to convict upon suspicion.

Mr. Richard Wadland was then called, and stated that he was a farmer, of Owlacombe, Roborough. On Monday, May 26, he had fifty-one pigs; forty-two or forty-three were running and the remainder penned. On that day Mr. Chanter, butcher, of Barnstaple, came to his farm, and purchased seven pigs for £19. At that time, so far as he saw, the pigs were perfectly healthy. He agreed to deliver the pigs on the following Monday, June 3. On the previous Saturday he attended Torrington market, and on his return home one of the pigs had been slaughtered because it had injured its leg. He examined the carcase on the following day (Sunday). He saw a small bruise on the inside of the off hind leg. With that exception there was nothing in the pig to indicate but that it was perfectly healthy. He had seen the other six at intervals the week previously, and saw no symptoms of disease whatever. He saw them lifted into the wagon on the morning of June 3; two of the pigs were crippled, as they had been for five or six weeks, but nothing else appeared to be the matter with them. They ate well, and gained flesh up to the time they left the defendant's yard. He received no intimation from anyone that his pigs were suffering from swine fever, or even had indications of it. After Mr. Chanter's pigs were removed there were two others left in the same stye, and a sow and seven young pigs in another division of the same building. There was nothing the matter with them. He slaughtered the large pig that was left, and one of his workmen had a ham off it. He would tell them what kind of meat it was. Mr. John Penhale, veterinary surgeon, of Bideford, visited defendant's farm on Wednesday, June 5, and examined the pigs that were left, but he found nothing the matter with them. On the previous occasion when his pigs had swine fever, he immediately, on discovering they were amiss, sent for a veterinary surgeon, and informed the superintendent of police at Torrington that they were ill, but he did not then know what was the matter with tnem, and he requested him to go out with a veterinary. None of the symptoms which presented themselves on that occasion were present in the pigs he sent to Mr. Chanter. His explanation of the remark that he should not have been surprised if one of the little pigs had died on the road was that in the heat of the day and travelling a journey it might have got down and been trampled upon and suffocated. Cross-examined: When he wrote to Mr. Chanter saying that it had been found necessary to kill one of the pigs, and he was to "do the best he could with it," he meant that perhaps Mr. Chanter did not want to kill the pigs at once, and he might have to sell it at a loss, and in that case witness would have made an allowance.

The Chairman of the Bench (Mr. W. P. Hiern) said they had unanimously decided to convict in this case, and defendant would be fined £12 and expenses, or in default two months' imprisonment.

Mr. Friend asked their worships to grant him a case on the point of want of knowledge, if they thought it necessary to carry the case further.

The Chairman said they found as a fact that the defendant with reasonable diligence could have obtained that knowledge.

Are Flats one Building?

At Hammersmith, Mr. F. Shingleton appeared to answer an adjourned summons at the instance of Mr. E. T. Knightley, District Surveyor of Hammersmith, who claimed fees in respect of some flats which he had erected in Haarlem Road. The complainant claimed a fee in respect of each flat, contending that it was a separate building, but the magistrate decided against him, holding that there was only one building. A certain amount had been paid on account, which, according to the magistrate's decision, was in excess of the legal claim, and the summons was adjourned to give Mr. Knightley an opportunity to refund the money, the question of costs to remain in abeyance. Mr. Douglas Norman defended, and said a letter had been received stating that the question of fees could be arranged at the Court. Mr. Knightley said he was sorry the magistrate could not agree with him, but he had given him protection in case of fire. He then submitted an amended claim on account of concrete walls, amounting to £7 13s. 9d. Mr. Curtis-Bennett pointed out that on the former occasion the complainant agreed to £5 2s. 6d. Now that there was a decision against him a new claim was made. Mr. Knightley said he did not think of it. Mr. Curtis-Bennett bound the complainant to the first amount, based upon a calculation of the fees for the one building, and, as Mr. Knightley agreed to refund the excess, dismissed the summons without costs.

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[*All communications must bear the signature of the writers, though not necessarily for publication.*]

PUBLIC LECTURES ON SANITATION.

I DO not wish to lay claim to being able to wield the pen in a more able manner than J. T., whose letter appears in the RECORD for July on the above subject. But I could not help noticing that he considers the only way for sanitary inspectors to improve their position is by educating the public. Now I have in my mind another plan whereby some inspectors can improve their position, and that is by educating themselves. I use the word some advisedly, because there are many who have moved with the spirit of the times, and are not content with doing their work in a perfunctory manner, never deviating from the course adopted some twenty years ago; others again care less for the public, but seek to please only their direct masters, "the Board or Committee," such was the expression used to me by a rural inspector not long since. How then can J. T. expect such men to stand up and endeavour to teach that which they do not themselves thoroughly know?

However, J. T. is quite right in the issue which he has raised. He and I are thoroughly agreed on that point; only, you see, I would begin a step further back, and say educate self first. Personally I have given several public lectures on various phases of "House Sanitation," and I have just arranged for one during the coming winter; but whilst there are many subjects in the field of "Sanitation," which would be of public interest, there are many which would interest inspectors only, and my suggestion is this, that the Associations should hold "open sessions" for some subjects and "private sessions" for the more exclusive subjects, and thus I think the wish of J. T. would be met.

While speaking of associations, we see that the Northern, Midland, and London inspectors have theirs, but we in the West are devoid of any means of concerted action or interchange of ideas. I for one should be very glad to help in any way for the formation of a Western society, if other inspectors in the district think well of the matter.

W. J. ADDISCOTT,
Cert. San. Inst.,
Plymouth. Assist. Inspector.

NOTICES OF MEETINGS.

REGULATIONS FOR CANDIDATES FOR THE DIPLOMA IN PUBLIC HEALTH OF THE ROYAL COLLEGE OF SURGEONS IN IRELAND.

I.—Stated examinations will be held quarterly. Special examinations will be held on such dates as the Council may from time to time appoint on each individual application.

II.—Every candidate must possess a registrable qualification, and must lodge his application and fees with the Registrar of the College one clear fortnight before the date fixed for the examination.

III.—Rejected Candidates will not be permitted to present themselves for re-examination until after the lapse of three months from the date of their rejection.

IV.—The fee for all candidates of the College is seven guineas. Candidates admitted to a special examination must pay an additional fee of three guineas; no portion of the fees will be returned to rejected candidates.

V.—The examinations will be conducted by means of written papers, practical and oral examinations, and will occupy three days.

VI.—*Subjects for Examination.—Chemistry, Physics, and Microscopy.*—The methods of examining atmospheric air, and the detection therein of impurities injurious to health; of examining water, beer, and milk, and of other articles of food and drink, for the purpose of detecting impurities and adulterations therein; of detecting the more important injurious substances in articles of dress and of decoration. The construction and use of thermometers, of barometers, of hygrometers, and other instruments used in meteorology and climatology.

VII.—*Engineering.*—The candidate will be tested with reference to ventilation, lighting, water supply, drainage, disposal of sewage and refuse, and on the general construction and sanitation of public buildings and other premises.

VIII.—*Hygiene.*—The candidate will be examined upon the ætiology and the geographical distribution of preventible diseases; the sanitary precautions that should be adopted to prevent the spread of epidemic and endemic infectious diseases; the circumstances that render certain manufactories prejudicial to health; unhealthy occupations; the diseases of animals used as food.

IX.—*Sanitary Legislation.*—The candidate will be required to prove that he is familiar with the principal statutes bearing on public health, viz.:—The Public Health Acts, and the Acts incorporated therewith; the Artizans' Dwellings Acts; the Artizans' and Labourers' Dwelling Improvement Acts; the Housing of the Working Classes Acts; the Vaccination Acts; the Contagious Diseases (Animals) Acts.

X.—*Vital Statistics.*—The candidate will be examined on the methods of calculating the rates of Births, Deaths, and Marriages; the rates of mortality caused by various diseases; and the influence of climatic conditions upon death-rates.

CONDUCT OF EXAMINATIONS.

1st Day—10 o'clock to 1.—Written examination on Chemistry, Physics.
3 to 6 o'clock.—Written examination on Sanitary Legislation and Vital Statistics.
2nd Day—10 to 1 o'clock.—Written Examination on Hygiene and Engineering.
3 to 6 o'clock.—Oral Examinations on the preceding subjects.
3rd Day—10 to 1 o'clock.—Practical Laboratory Examination.
3 to 5 o'clock.—Written report upon some indicated locality as to its sanitary condition and requirements.

THE ASSOCIATION OF PUBLIC SANITARY INSPECTORS OF GREAT BRITAIN.

Founded 1883.

SIR EDWIN CHADWICK, K.C.B., President.

THE Second Annual Summer Meeting of the Association, by invitation of the Mayor and Corporation of Folkstone, will be held in that town, on Wednesday, September 4, 1889, and the Council hope that the members who have not yet fixed their summer holidays will endeavour to make arrangements enabling them to attend this meeting. If a number can remain at Folkestone over Thursday September 5, and will communicate with the Hon. Secretary, he will arrange an excursion to Boulogne and back on that day—September 5.

Railway Arrangements.

London to Folkestone and back on September 4 - 5 0 each
Ditto if the party consists of 50 - 4 0 „
If an extension of time of return should be required 1 6 „
by train leaving Charing Cross at 8.10, Cannon Street at 8.20, and London Bridge Stations at 8.25, returning from Folkestone same day.

Outline of Programme.

The members will be received in the Exhibition, Folkestone, by his Worship the Mayor (S. Penfold, Esq., J.P.), at 11.0 A.M., who will also open a Conference on Sanitation at 11.15 A.M.

Addresses will be delivered by Dr. W. Bateman, J.P. (medical officer of health), and Dr. C. E. Fitzgerald, M.D., and a large number of influential gentlemen are expected to attend.

Interval—12.30 to 2.0.

When the Members of the Association will be entertained at luncheon by the Worshipful the Mayor of Folkestone.

The Members will re-assemble at the Town Hall at 2.0 P.M., and among the various works of interest to be visited will be the Folkestone Gas and Water Works.

Cards and Programme will be sent to those who signify their intention of attending.

117, Powerscroft Road, SAMUEL C. LEGG, *Hon. Sec.*
Lower Clapton, London, E.

THE SANITARY INSTITUTE,

Parkes Museum, 74A, Margaret Street, W.

AT an Examination held for Local Surveyors, July 25 and 26, 9 Candidates presented themselves. Questions were set to be answered in writing on the 25th, and the Candidates were examined *viva voce* on the 26th.

The following Candidates were certified to be competent, as

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regards their Sanitary Knowledge, to discharge the duties of Local Surveyors:—

Gibson, William, Bonhay Road, Exeter.
Massey, Joseph Bennett, 64, Burn Street, Burnley.
Radcliffe, Joseph, Cambridge Place, Todmorden.
Reid, David John, 2, Post Office Buildings, Inverness.
Towlson, Samuel, 54, Hanover Road, Plumstead.

ASSOCIATION OF MUNICIPAL AND SANITARY ENGINEERS AND SURVEYORS.

Examinations.

The next Examination of Candidates for the offices of Municipal Engineer and Local Board Surveyor will be held at these offices, on Friday and Saturday, October 4 and 5 next.

Applications for this Examination must be sent to the Secretary not later than September 5.

Westminster Chambers, 11, Victoria Street, London, S.W.
June 10, 1889.

THOMAS COLE, *Secretary.*

LOCAL INTELLIGENCE.

THE Chelmsford Town Council have increased the salary of their sanitary inspector (Mr. Thomas Chilvers) from £24 to £40 per annum.

THE HIGH DEATH-RATE AT ALNWICK.—At the ordinary meeting of the Alnwick Local Board on July 17, Mr. F. R. Wilson submitted a letter which he had received from Sir R. Rawlinson, as follows:—

"Lancashire Lodge, 11, Boltons,
"West Brompton, S.W., July 7, 1889.

"Dear Sir,—I have duly received the report of the death-rate of the district, and feel sorry that better results have not followed the cost of the local works. More, however, depends on local management than on works. As to the sewers, I ask—are they fully ventilated? and if not, this may easily be done by forming a vertical flue at the highest point of each main sewer and by a manhole severing the outlet sewer from the town sewers at the lowest point of the lower sewer as I have indicated. A manhole as I have delineated will prevent any sewage gases from the main outfall sewer blowing into the town sewer. If it is not convenient to have an open grate above the manhole in the road or street, there may be side branch drains to take the gases out of the road. The local surveyor must think out the best way to fully ventilate the main sewers. No house drain should enter in houses, but stop outside and have full ventilation.—Yours, &c.,

"R. RAWLINSON.

"P.S.—Ventilation will not very much improve bad houses, and there are too many of this sort in Alnwick, some on towards the Castle entrance—dens frequented by vagrants and tramps. Mend these by new labourers dwellings."

Mr. F. R. Wilson moved that the letter be referred to the Mortality Committee.—It was further resolved that the thanks of the Board be conveyed through Mr. F. R. Wilson to Sir Robert Rawlinson for giving his opinion upon the town with which he was so well acquainted.

THE SANITARY ADMINISTRATION OF THE BOROUGH OF LEEDS.—In his quarterly report to the Sanitary Committee Superintendent Newhouse regrets that the contractor for the cleansing of ashpits has not yet begun to cleanse and deodorise the ashpits in accordance with the terms of the specification and contract, and trusts that the committee will insist upon the work being fully carried out according to agreement. The inspection of pollution to the River Aire is being steadily carried out; samples and reports on the pollution by Local Boards and works outside the boundaries of the borough have been presented to the committee, and the Town Clerk has been instructed to take action.

THE Islington Vestry have decided to adopt the Public Baths and Washhouses Act, 1846 and 1847. There were 42 votes for the motion and 20 against it.

AT the meeting of the Hornsey Local Board, on July 15, the Chairman moved that the salary of the Surveyor, Mr. T. de Courcy Meade, be raised £100 a year from July 1, that his salary should be increased £50 a year from the 1st of next July, and £50 a year the following July, making in all £700 a year. The Chairman spoke in highly eulogistic terms of the value of Mr. Meade's services in connection with the Board and district, and the motion was adopted.

AT the meeting of the Leicester Town Council, on July 17, a letter was read from Mr. J. Gordon, the Borough Surveyor, resigning his appointment, consequent on his recent election as Chief Engineer to the County Council of London. The Mayor said that the duty of the Council would be to refer the matter to a Committee, and he moved that the letter be referred to the Highway and Sewerage Committee and the chairmen of committees to report at the next meeting. The letter would be received with mingled feelings—not altogether with regret, because they must rejoice that their friend Mr. Gordon had obtained what was termed, he believed, the blue riband of his profession. It was highly creditable to Mr. Gordon that he should have been the successful candidate for so important a position, and they were losing a very valuable official—a man who, during the nine years he had been with them, had more than justified the expectations that were formed of him when he came. Mr. Gordon would be the first to admit that in Leicester he had found a broad and wide field for his work. They were just under the necessity of entering upon some very large undertakings, and that was an excellent opportunity for a man of Mr. Gordon's ability. They would part with him with the deepest regret, but they would always feel that it was a credit to Leicester that they ever had him as their Surveyor. Alderman Kempson seconded the motion, and it was agreed to.

AT a recent meeting of the Windsor Town Council, a resolution was passed that Mr. Thomas Vincent Davison, A.-M.I.C.E., the Borough Surveyor, be thanked for the services rendered by him during the period of the Royal Agricultural Show at Windsor, and that an honorarium of £10 10s. be awarded him for his services.

AT a meeting of the Skipton Rural Sanitary Authority of July 6, the Clerk mentioned that the Local Government had written informing them that they had confirmed the appointment of Mr. C. C. Smith as Sanitary Inspector for a period of one year only, that being the term for which Mr. Smith was originally appointed. They were not willing to appoint him for the three years which the Guardians had recommended as they made it a practice never to re-appoint a person for a longer period than that for which he was originally appointed. The Clerk pointed out that if they had originally appointed Mr. Smith for a fortnight the Local Government Board would go on re-appointing him every fortnight for the rest of their lives. It would, therefore, be their duty to act according to the directions of the London Authority and appoint Mr. Smith for one year instead of three, as intended. On the motion of Mr. Eastwood, seconded by Mr. Heyworth, this was accordingly done.

ROYAL COLLEGE OF SURGEONS IN IRELAND.

DIPLOMA IN PUBLIC HEALTH.

The following gentleman having passed the necessary examinations, received the Diploma in Public Health:—

Dr. JOHN HENRY GRIFFIN, M.D., F. & L.R.C.S.I., L.R.C.P. Lond., L.M.K. & Q.C.P.I., L.A.H.I.

APPOINTMENTS.

MEDICAL OFFICERS OF HEALTH.

BOWMAKER, Edward, M.B., B.Sc.Durh., has been appointed Medical Officer of Sunderland Rural District.

DEGUICHY, Charles D., has been appointed Medical Officer of Health to the Newport (Monmouth) Rural Sanitary Authority.

EGAN FRANCIS, L.K.Q.C.P.I., L.R.C.S.I., has been appointed Medical Officer of Health for the parish of Fulham, at an annual salary of £300.

GLEN, John, M.B.Glas., and C.M., has been appointed Medical Officer of Health to the Normanby Urban Sanitary Authority, *vice* Dr. James Glen, M.D., resigned.

LEWIS, Mr. John N., has been appointed a Medical Officer of Health to the Newport (Mon.), Rural Sanitary Authority.

REID, George, M.D., M.B., C.M.Aber., has been appointed temporarily Medical Officer to the County of Staffordshire.

RUTHERFORD, John James, L.R.C.P.Edin., and C.M., has been appointed Medical Officer to the Shipley Urban Sanitary Authority, *vice* Mr. W. H. Ellis, resigned.

SIMPSON, J. Christian, M.B., C.M., Senior Resident Surgeon, Royal Infirmary, Edinburgh, has been appointed Medical Officer of Health to the Parish of Fettercairn.

WHITELEGGE, B. Arthur, B.Sc.Lond., M.D., M.B., M.R.C.S., has been appointed Medical Officer for the West Riding of Yorkshire, at a salary of £800 per annum.

POOR-LAW MEDICAL OFFICERS.

ALLAN, Francis J., M.D., D.P.H.Camb., has been appointed Deputy Public Vaccinator to the Whitechapel Union.

BRETTINGHAM, C. E. Seppings, L.F.P.S.Glasg., L.A.H.Dub., Medical Officer and Public Vaccinator to the Stogumber Division of the Williton Union, has been appointed Medical Officer of Health to the Eastern Division of the Williton Union, *vice* Mr. R. Pairman, resigned.

BRODERICK, Dr. H. E., has been appointed Medical Officer to the Barrowby District, Northallerton Union, and to the Knayton District, Thirsk Union, *vice* Mr. Charles Tweedy, resigned.

CARTER, Graham A., M.D.Aber., L.R.C.S., L.M.Edin., has been appointed Medical Officer of the St. Chad District, Lichfield Union.

CHAMBERS, A. B., M.D., M.Ch., L.M.Irel., has been appointed Medical Officer of the Stapleford District of the Shardlow Union, *vice* Mr. W. D. Mackern, deceased.

DOUDNEY, Edwin, L.R.C.P.Edin., L.M., M.R.C.S., has been appointed Medical Officer of the Third District of the Plympton St. Mary Union, *vice* Mr. E. C. Langford, deceased.

ELLIOT, J. P., L.R.C.P., L.R.C.S., L.M.Edin., has been appointed Medical Officer of the Second District of the Bellingham Union., *vice* Dr. Robert Jackson, deceased.

EMSON, Alfred, L.R.C.P., L.R.C.S.Edin., has been appointed Medical Officer to the Broadmayne District of the Dorchester Union, *vice* Mr. Fred Baxley Fisher, L.R.C.P., M.R.C.S., resigned.

GALBRAITH, Thomas, M.B., C.M. Edin., has been appointed Medical Officer and Public Vaccinator of the Nunney District, Frome Union, *vice* A. W. Dalby, resigned.

GILBERT, Harvey J., L.R.C.P.Edin., M.R.C.S., has been appointed Medical Officer of the Eleventh District Wisbeach Union, *vice* Mr. S. W. Arundell, M.R.C.S., L.S.A., resigned.

GRIFFITH, P. S., L.R.C.P. & S.Edin., has been appointed Medical Officer to the Pelham District, Bishop Stortford Union, and of the Fourth District, Saffron Walden Union.

GORDON, Bryce, L.R.C.P.Lond., M.R.C.S.Eng., has been appointed Medical Officer to the Second Division, First District of the Halstead Union, *vice* Mr. Robert Guy Kellett, L.K.Q.C.P., resigned.

GREENWOOD, E. C., L.R.C.P.Lond., M.R.C.S.Eng., has been appointed Public Vaccinator for the parish of St. Marylebone.

HANILL, Samuel, B.A., M.D., M.Ch.B.Univ.Irel., has been appointed Medical Officer and Public Vaccinator of the Burnham District, Docking Union, Norfolk.

HART, F. J. Lorimer, M.B.Edin., C.M., L.M., has been appointed Medical Officer and Public Vaccinator to the Wansford District of the Stamford Union, and to other offices.

HAWKINS, Cæsar Frederick, M.R.C.S., and L.S.A.Lond., has been appointed District Medical Officer and Public Vaccinator for the North Petherton District of the Bridgewater Union, *vice* W. J. Todd, M.R.C.S., L.R.C.P.Lond., deceased.

HOLDEN, John Sinclair, M.D.Qu.Univ.Irel., L.R.C.S.Edin., F.G.S., has been appointed Medical Officer of Sudbury Union, Third District.

HOPKINS, J. W., has been appointed Medical Officer to the First District of Leeds Union, *vice* Mr. W. J. Hopkins, resigned.

HUTCHINSON, Dr. A. C., appointed District Medical Officer to the Holywell District Parish of St. Leonard, Shoreditch, *vice* F. C. Roe, resigned.

INGLE, Arnold C., B.A., M.B., B.C.Cantab., M.R.C.S., L.S.A., has been appointed Medical Officer to the Third District of the Cambridge Union, *vice* Mr. E. N. Ingle, B.A.Cantab., M.D., resigned.

JEROME, Mr. Ernest J., L.R.C.P., L.R.C.S.Edin., has been appointed Medical Officer to the Camelford District and Union and Workhouse Infirmary.

MACDONALD, James A., M.D., M.S.R.U.Irel., has been appointed Medical Officer to the Taunton St. Mary District, Taunton Union, *vice* Mr. Thomas Leeson, resigned.

MURPHY, A., L.R.C.S.I., L.K.Q.C.P.Irel., has been appointed Medical Officer to the Balrothery Union (Holmpatrick Dispensary), *vice* W. Symes, M.B.Dublin, F.R.C.S.Irel.

MILLER, James G., M.B., C.M.Edin., has been appointed Medical Officer to the Fourth District of the Bellingham Union, *vice* Dr. Robert Jackson, deceased.

MOORE, Mr. William D., has been appointed Medical Officer to the Greatham District of the Hartlepool Union, *vice* Mr. J. Nesbitt, resigned.

ODELL, Thos., M.R.C.S., L.S.A., has been appointed Medical Officer of the Third District Hertford Union.

PARSONS, F. J. C., L.R.C.P.Lond., M.R.C.S.Eng., has been appointed Medical Officer of Health to the Bridgwater Union and Rural Districts.

PORTER, Mr. William E., has been appointed Medical Officer to the Western Division of the Tottenham District of the Edmonton Union.

POSTLEWAITE, Frank, M.R.C.S., L.S.A., has been appointed Medical Officer to the High District of the Longtown Union, *vice* Mr. H. J. B. Lorraine, resigned.

RUSSELL, James, M.A., M.B., C.M.Edin., has been appointed Medical Officer to the Keighley Union, *vice* F. Wilson, L.R.C.P., L.R.C.S., resigned.

SAWYER, Mr., has been appointed Medical Officer and Public Vaccinator to the Clevedon District of the Bedminster Union, *vice* Mr. George Pizey, resigned.

SEGUERRA, H. J., M.R.C.S., L.S.A., has been appointed Medical Officer of No. 3 District of the City of London Union.

SHEPPARD, Edward Thomas, L.R.C.P., L.R.C.S.Edin., has been been appointed Medical Officer and Public Vaccinator to the No. 1 Clifton District of the Barton Regis Union, *vice* F. C. Hawkins, resigned.

TIBLEY, Thomas, M.D.Durh., R.C.P., L.F.P.S.Glasgow, has been appointed Medical Officer of Health Whitby Union District, and No. 1 Division Whitby Rural District, *vice* Dr. Johnson Herbert, resigned.

WARD, G. S., L.R.C.P., L.M., L.R.C.S.Edin., has been appointed Medical Officer to the Fifth District, Hertford Union.

WESTWOOD, J., L.K.Q.C.P.Irel., has been appointed Medical Officer of the Fillongley District, Meriden Union, *vice* G. D. Bradnell, resigned.

Public Analysts.

CRIBB, Mr. C. H., has been re-appointed Public Analyst by the Strand District Board for twelve months, on the old terms.

HEATON, Mr., has been re-appointed Public Analyst to the St. Martin's Vestry at £50 per annum, or 10s. 6d. for each analysis.

PIESSE, Mr. Charles H., M.R.C.S., L.S.A., has been re-appointed Public Analyst for Fulham.

Surveyors.

EBBETTS, D. J., A.R.I.B.A., has been appointed to the office of Surveyor to the Acton Local Board at a salary of £300 per annum.

Clerks.

BEARCROFT, Mr. Arthur J., has been appointed Clerk to the Guardians of the Droitwich Union, *vice* Mr. H. Bearcroft, deceased.

THOMPSON, Mr. John, has been appointed Clerk to the Guardians of the Weardale Union, *vice* Mr. J. Lees, resigned.

Inspectors of Nuisances.

ALLONBY, Mr. Edward, has been appointed Inspector of Nuisances to the Ulverstone Rural Sanitary District *vice* Mr. J. Salthouse, resigned.

BECK, Mr. William C., has been re-appointed Inspector of Nuisances to the Hastings Rural Sanitary Authority.

BRUMELL, Mr. G. W., has been appointed Inspector of Nuisances to the East Barnet Valley Urban Sanitary District, *vice* Mr. F. J. Rumble, deceased.

CHIPPERFIELD, Mr. William R. H., has been appointed Inspector of Nuisances to the Atherstone Union in the room of Mr. John Fitter.

GREENAWAY, Mr. John, has been appointed Inspector of Nuisances to the Sedgley Urban Sanitary District, *vice* Mr. E. T. Handley.

JONES, Mr. William, has been appointed Inspector of Nuisances to the Knighton Urban Sanitary Authority, *vice* Mr. H. Anthony, deceased.

LAYCOCK, Mr. Thomas W., has been appointed Inspector of Nuisances to the Walker (Northumberland) Urban Sanitary Authority, *vice* Mr. W. Myers.

POOLEY, Mr. Henry, Junr., has been appointed Inspector of Nuisances to the Redruth Rural Sanitary Authority, *vice* Mr. Thomas Glasson, deceased.

ROBERTS, Mr. Robert O., has been appointed Inspector of Nuisances to the Carnarvon Sanitary Authority, Carnarvon Union, *vice* Mr. R. Rogers, resigned.

SIMMOND, Mr. John, has been appointed Inspector of Nuisances to the Eton Urban Sanitary Authority, *vice* Mr. John Whitehouse, deceased.

PARKES, Louis C., M.D., D.P.H.Lond., has been appointed Assistant Professor of Hygiene at University College, London.

MULLEN, John W., L.K.Q.C.P.I., L.R.C.S.I., &c., has been appointed Medical Superintendent of the Wilton Fever Hospital, in the County Borough of Salford, *vice* Dr. John.

RESIGNATIONS.

ALLEN, Mr. J. H., Inspector of Nuisances to the Matlock Urban Sanitary Authority.

CREERY, Mr. Leslie, Clerk to the Guardians, East Ashford Union.

DINWOODIE, Mr. W., Medical Officer to the Elsdon District, Rothbury Union.

EWING, Mr. Charles A., Inspector of Nuisances to the Hoole Urban Sanitary District.

GOLDIE, George, L.R.C.P.Edin., M.R.C.S.Eng., L.M.Edin., Medical Officer of Health to the Borough of Leeds.

HEADEN, Mr. C., Inspector of Nuisances to the Droitwich Urban Sanitary Authority.

HERBERT, Dr. Johnson, Medical Officer of Health to the Whitby Sanitary Authority.

HIGGINS, Mr. G. H., Medical Officer to the Teddington District Kingston Union.

PIZEY, Dr., Medical Officer of Health to the Clevedon Urban Sanitary Authority.

ROBERTS, Dr. Arthur, Medical Officer to the Bingley Urban Sanitary Authority.

TURNER, Mr. F. H., Medical Officer to No. 2 District, Wycombe Union.

WEBSTER, Mr. John L., Inspector of Nuisances to the Malton Urban Sanitary Authority.

WILKIN, G. C., Medical Officer to the Parish of Burwash.

VACANCIES.

PROFESSOR OF ENGINEERING, &c.—The Professorship of Engineering and Mechanics having become vacant, the Governors of the Heriot-Watt College, Edinburgh, will be glad to receive applications for the appointment. The new professor will commence duties on September 16. Written applications, accompanied by thirty copies of testimonials, should be sent to the Treasurer of George Heriot's Trust, 20, York Place, Edinburgh, by August 22. Salary, £400 per annum.

MEDICAL OFFICER.—The Leeds Corporation Sanitary Committee have decided to recommend to the Council the advertising for a Medical Officer of Health for the Borough of Leeds, at a salary of £700 a year.

MEDICAL OFFICER OF HEALTH.—The Chelmsford and Maldon Rural Sanitary Authorities will, on Tuesday, the 3rd day of September next, proceed to the appointment (for three years) of a Medical Officer of Health for the combined Rural Sanitary Districts of Chelmsford and Maldon, in the County of Essex. Salary, £600 per annum, to include all travelling and other expenses. If the Local Government Board should appoint either of the above Authorities to be a Port Sanitary Authority, the officer appointed is, if required by such Authority, to act, without extra salary, as the Medical Officer of Health over the Waters and District assigned to such Authority. The person appointed will be debarred from private practice, and be required to devote the whole of his time to the duties of his office. Applications, with testimonials, &c., to be forwarded on or before the 17th day of August, to W. W. Duffield, Clerk of the Joint Committee, 96, High Street, Chelmsford.

SURVEYOR AND NUISANCE INSPECTOR.—The St. Austell Guardians are advertising for a person to fill this post. Salary, £80 per year. Application to be made to the Clerk, Mr. W. Coode.

COUNTY SURVEYOR.—The County Council of Nottingham are desirous of receiving applications for the office of County Surveyor, who will be required to reside near the town of

Nottingham, and to devote the whole of his time to the discharge of the duties of his office, and will not be allowed to engage in any private practice. Salary, £500 per annum, and in addition travelling expenses will be paid. Applications, marked "County Surveyor," enclosing not more than three or four testimonials, must be sent to the undersigned, Jesse Hind, Deputy Clerk of the Council, 20, Fletcher Gate, Nottingham.

INSPECTOR OF WEIGHTS AND MEASURES.—The County Council of Middlesex require an officer to perform the duties of Inspector of Weights and Measures. Salary, £150 per annum, moiety of fines, and rent of station; also Inspector under Food and Drugs Act for the Eastern District of the County. Salary, £150 per annum, 10s. on each conviction, and travelling expenses. Applications to be sent to the Clerk of the County Council, Guildhall, Westminster.

BOROUGH SURVEYOR.—The Council of the Borough of Leicester are desirous of receiving applications for the office of Borough Surveyor. He will be required to devote the whole of his time to the service of the Corporation. Salary £700; offices, assistants, &c., provided by the Council. Pupils not allowed. Sealed applications, stating age and qualifications, endorsed "Borough Surveyor," accompanied by testimonials, to be addressed to John Storey, Esq., Town Clerk, Town Hall, Leicester, not later than August 17.

VESTRY CLERK for the Parish of Wandsworth. Forms of application for this post (Salary £450 per annum) can be obtained at the Vestry Clerk's Office, Town Hall, Wandsworth. The person appointed will be required to devote his whole time, and to provide all necessary assistance. Applications, accompanied by not more than five testimonials of recent date, must be sent to Mr. E. E. Greville, Vestry Clerk, Town Hall, Wandsworth, by August 20.

RESIDENT ENGINEER.—The Rivers Committee of the Manchester Corporation invite applications for the appointment of a Resident Engineer to take charge, under the City Surveyor, of the carrying out of the Main Drainage Scheme and Outfall Works for the treatment of Sewage. The person appointed will be required to devote the whole of his time to the duties. The appointment to be made is for the carrying out the specific work only. Salary £450 per annum. Applications, stating age, accompanied by testimonials, to be addressed to the Chairman of the Rivers Committee, Town Hall, Manchester, endorsed "Resident Engineer," and delivered not later than August 20.

DEATHS.

EVANS, Arthur G., Medical Officer to the Workhouse and to the Towcester Union.

NORTON, Mr. John, Medical Officer of the Gray's Inn Road Workhouse, Holborn Union.

CONTRACTS.

KETTERING WATERWORKS.

THE Kettering Waterworks Company invite tenders for the construction of a portion of the new works authorized by the Kettering Waterworks Act, 1889, comprising the Embankment for a Storage Reservoir, with Valve-tower, Culvert, Overflow Weir, Waste Channel, and works in connection, the laying of about 3 miles of main, and the construction of a Service Reservoir.

Drawings and Specifications may be inspected, and Quantities and Forms of Tender obtained at the office of the Engineer, Mr. Thomas Hennell, 6, Delahay Street, Wes minster, on payment of 2 guineas, which will be returned to all parties sending *bonâ fide* Tenders.

Tenders must be sent to the undersigned not later than August 15.

11, Horse Market, Kettering. WM. JAS. GUY, Secretary.

BROMLEY LOCAL BOARD.—TO CONTRACTORS.

Sewer Extension from Bird-in-Hand Lane to Beechcroft.

Tenders are hereby invited for the construction of about 1,400 feet lineal of 9-inch Stoneware Piping, with the necessary manholes, &c., in accordance with the plan, section, and specification prepared by the Board's Surveyor, and to be seen at the Board's Offices, Bromley, Kent.

Tenders endorsed "Bird-in-Hand Lane Sewer Extension," to be sent to the undersigned on or before Monday, September 2.

By order,

ROBERT GORDON MULLEN, Clerk to the Board.

Local Offices, Bromley, Kent.

TUNBRIDGE WELLS.—TO SEWER AND ROAD CONTRACTORS.

Messrs. Langridge and Freeman are prepared to receive Tenders for the formation of a road abutting on St. John's Road, Tunbridge Wells, and for providing and laying stoneware pipe sewers and other work in connection with same.

Plans and Specifications of the work can be inspected at the offices of Messrs. Langridge and Freeman, at the Great Hall, Tunbridge Wells.

Sealed Tenders to be delivered to Messrs. Langridge and Freeman on or before Monday, August 26.

OTFORD SEWERAGE AND WATER SUPPLY. (Contract No. 3.)

The Rural Sanitary Authority of Sevenoaks invite Tenders for the construction of about 1¼ mile of Stoneware Pipe Sewers, with manholes, flushing-chambers, &c.; providing and laying about 3½ miles of drain pipes, and construction of an engine house and a small service reservoir.

Drawings and specifications may be inspected, and bills of quantities with Forms of Tender obtained from the Engineer, Mr. Thomas Hennell, 6, Delahay Street, Westminster.

Tenders must be forwarded, sealed and endorsed "Otford Contract No. 3," to the undersigned, on or before August 15.

By Order,

Sevenoaks. GEORGE F. CARNELL, Clerk.

BOROUGH OF CHORLEY.—NEW SEWAGE WORKS.

The Chorley Corporation are prepared to receive Tenders for the construction of about 870 yards of Brick Sewers, 3 ft. diam.; also the laying of about 300 yards of Pipe Sewers 15 in. and 24 in. in diameter.

Plans and Specifications may be seen, and Forms of Tender and Quantities obtained, at the Borough Surveyor's Office, Town Hall, Chorley, or at the office of Messrs. John Newton & Sons, Civil Engineers, 17, Cooper Street, Manchester, on payment of £1 1s., which will be returned on receipt of *bonâ fide* Tender.

Sealed Tenders, endorsed "Sewage Works," to be sent to me before noon on Monday, August 19.

By Order, THOS. A. JACKSON, Town Clerk.

Town Hall, Chorley, July 29.

NOTES AND QUERIES.

Having for some time back been in the receipt of Queries appertaining strictly to sanitary work, and which it would be easy to answer without having to refer our correspondents to competent professional advisers, we have opened a column in which to register such Queries and Replies thereto as can fairly be expected from us; and our subscribers and readers are invited to make such use of this column as will tend to benefit themselves and the community. Both Queries and Replies will, however, be subjected, if unnecessarily long, to a strict curtailment.

TUBERCULOUS MEAT.

In your article re Tuberculous Meat cases at Glasgow you refer to a small hand-book on "The Physical Appearances of Sound and Unsound Food," by Mr. Vacher. I should feel obliged if you could tell me where I may obtain a copy of the said book.

A SANITARY INSPECTOR.

[A limited number of copies have kindly been placed by Mr. J. Vacher at the disposal of the Editor of the SANITARY RECORD, to whom application should be made.]

ASSOCIATION OF MUNICIPAL AND SANITARY ENGINEERS AND SURVEYORS.

Would you kindly inform me in the RECORD for this month if there is a Society or Association of Sanitary Engineers, and, if so, please state address where its meetings are held, and oblige,

Yours, &c., R.P.C.

[See NOTICES OF MEETINGS, p. 93.—ED.]

SURVEYOR'S CERTIFICATE.

Would you kindly give me a little information (through the RECORD) on the following points? I have seen the examination papers of previous examinations published in the RECORD.

1. Which of the two certificates is considered more valuable; the Local Surveyor's certificate given by the Sanitary Institute, or the Municipal Engineer's Certificate given by the Association of Municipal Engineers.

2. I have, I think, seen it stated in the RECORD that the Sanitary Institute do not usually pass men examined by them the first time they sit, but recommend them to come back again. Can you inform me whether this applies also to the Association of Municipal Engineers? ASPIRANT.

[1. The Municipal Engineers and Surveyors' examination embraces subjects not touched by that of the Sanitary Institute for Local Surveyors, as, for instance, surveying and levelling, and generally it is much more searching and practical, so that it is difficult to pass unless the candidate has considerable practical experience in addition to theoretical knowledge. As a test of the possession of knowledge the Municipal Engineers' examination is therefore the more valuable of the two. As a recommendation for an appointment it would probably be more useful than the Sanitary Institute certificate; but, so far as can be judged from the advertisements of vacant appointments, neither certificate is held in much favour at present, experience is the best recommendation.

2. Many candidates have passed either the Sanitary Institute or the Municipal Engineers' examination at the first attempt, the failures are those who have gone up for examination without being fully prepared.—ED.]

COVERED DRAINS.

Would you kindly in your next issue give me the legal interpretation of that part of section No. 23 Public Health Act 1875, which compels an owner of a house to make a covered drain to Authority's sewer that is within 100 feet of the site of the house? Does this mean 100 feet from any part of house itself, or if any part of the premises is within 100 feet, the house itself being 200 feet from sewer?

[The words of section 23 seem plain. They are from "the site of such house." We are not aware that these words have ever been authoritatively interpreted in a court of law, but there can be no doubt that they refer to the house itself, and not to a garden or yard adjoining it. Outbuildings if connected with and forming part of the house would probably have to be reckoned in measuring the 100 feet.—ED.]

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ORIGINAL PAPERS.

THE INSPECTION AND CLEANSING OF DOMESTIC DRAINAGE.

By W. D. Scott Moncrieff.

(*Continued from page* 49.)

Matters might have rested at the point I have just described if it had not been impressed upon me that the arrangement was one which necessarily appealed to a comparatively limited body of householders, on account of the expense which was entailed, more especially by the somewhat costly cover in which machined surfaces of iron were employed to secure a gas tight contact. Since then my efforts have been principally directed towards bringing the cost of the apparatus to a point so low that the advantages of the system fully outweigh any little addition to the price of the less efficient methods which I may safely say in cases of failure are dear at a gift. The objection which was made by a distinguished architect to a perishable india-rubber joint as an alternative to the more expensive faced metal surfaces, led me to adopt asbestos rings for packing, and this again led to the introduction not only of a much less expensive cover, but also to a simpler and cheaper means of fixing them, by means of a hinged bridge in which there works a lever, the lower end being a cam to produce the necessary pressure. This cover is illustrated in Fig. XII.

Fig. XII.

One obvious advantage of this arrangement is that it can be securely fixed in any manhole by having the plate cast to the dimensions required for overlapping all round into the brickwork.

The next step towards a more perfected apparatus is shown in Fig. XIV., in which the improved plate and cover are bolted on to a shallow cast-iron manhole.

A still further improvement is shown in Fig. XVI., in which, as you will see, the necessity for a cast-iron plate bolted to the flanged sides of the shallow manhole is done away with, as the sides of the manhole themselves serve the purpose by bringing them into a circular form upon the top, with an edge to take the cover and lugs for the reception of the hinged bridge or cross-bar.

By means of these appliances the difficulties of draining a house have been greatly overcome.

There is no complication of branch drains to which these shallow cast-iron manholes are not applicable and the certainty of being able to make one joint as good as another, each and all of them being run in with molten lead and caulked, as in the case of high pressure mains, gives an assurance of security which is equal to that of the excellent practice in America. At the same time, the advantages are obtained, not only of the simple provision for thorough ventilation of the drains and soil pipes which I have already spoken of as a great improvement upon the less developed and more complicated system used in the United States, together with all the benefit which arises from small manholes instead of large sewer gas cesspits, and a greatly increased current of fresh air through the drains. In cases where the manholes are deep, or, in fact, in every instance in which the cast-iron manhole does not coincide with the ground or basement level, the construction of the manhole becomes the legitimate province of the bricklayer, in which the sides have to be made of sufficient strength to resist the pressure of the earth, but who is relieved of what I believe to be the absurd and altogether unnecessary ordeal of the subjection of his work to a test of hydraulic pressure which it is quite unfitted to stand.

There are other supplementary provisions for cleansing and inspection which I shall mention in a very few words. At bends in pipes, where there are no manholes, the knuckle of the bend should be provided with screwed removable brass caps, or in the immediate neighbourhood of the bend Y junction should be fixed with a provision of a similar kind. At the extreme end of a drain, where there is not more than a few feet of unventilated pipe, and where there are no branch drains to be provided for, I have used a circular terminal in cast-iron of a pot shape, with a cover upon the ground level and a screwed brass plug similar to those which should be used in the case of bends or Y junctions. (See Fig. XIX.)

When on the subject of means for inspection, I should mention that a branch eye should in all cases be brought back from that portion of the drain which lies between the disconnecting trap and the street sewer, so that obstructions, if they should occur, can

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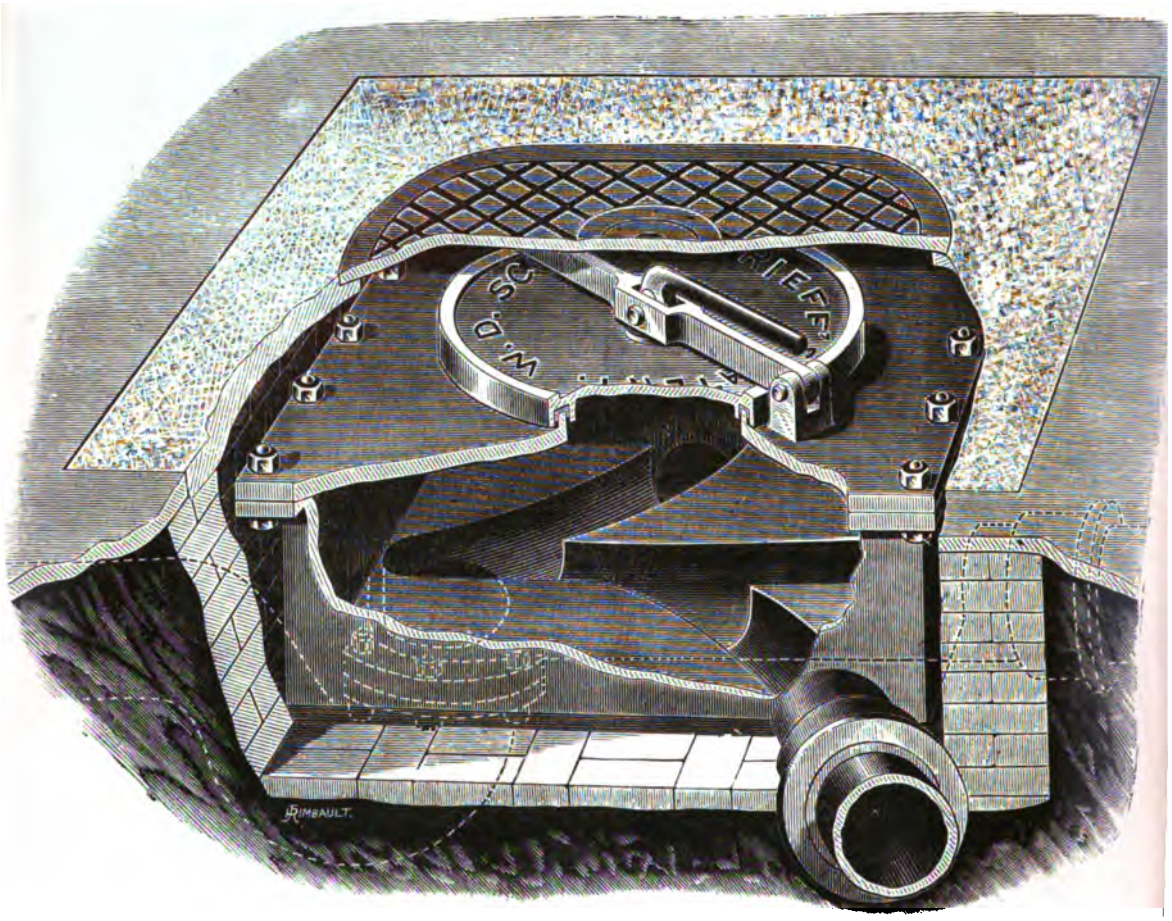

Fig. XIV.

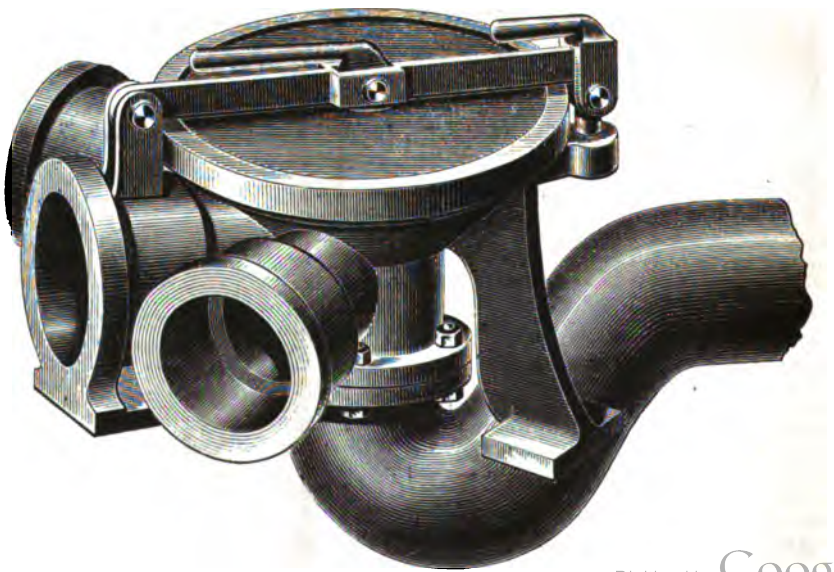

Fig. XVI.

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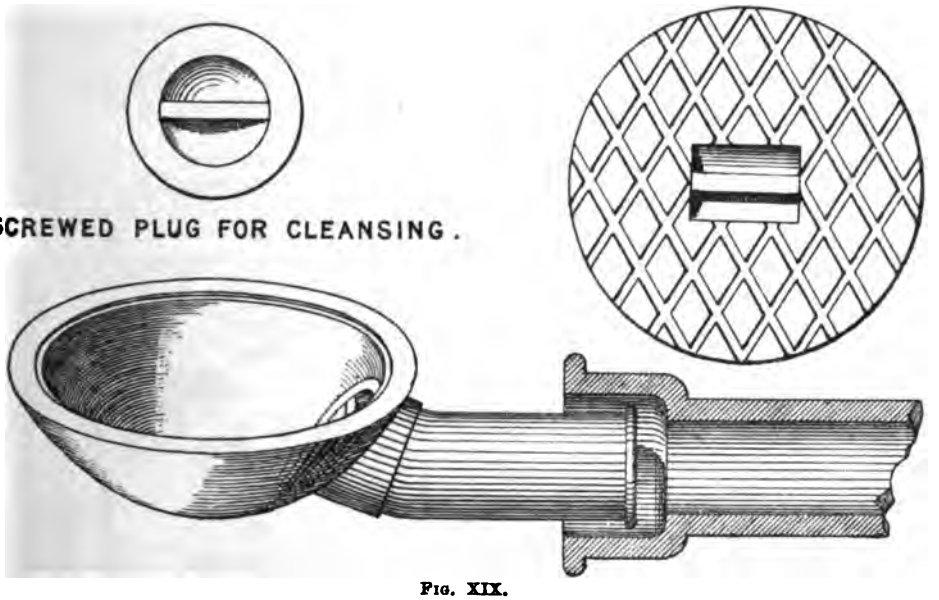

Fig. XIX.

be removed without having recourse to the sewer itself. In the case of shallow cast-iron manholes this object can be best attained by fixing a Y junction on the drain immediately beyond the trap, and bringing back a connection so as to pierce the built wall of the manhole, provision being made for access by means of a removable brass plug.

I am afraid I have already detained you too long with that portion of my subject which refers to the inspection of domestic drainage; but, in fact, as many of you must be aware, I have treated the subject far from exhaustively, and more with a view of

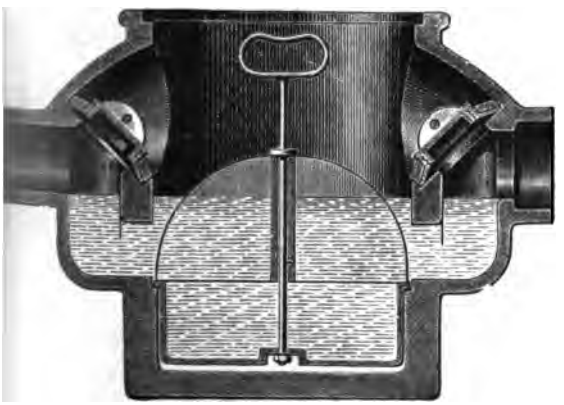

Fig. XX.

bringing the salient and most important points to your notice. I have here a grease trap (Fig. XX.), in which you will notice I have made provision for inspection of both the inlet and outlet by means of removable plugs, and for the cleansing of the trap itself by a movable dish filled with baffler plates to prevent the too rapid current of hot water impregnated with grease into the drains. I have also here a valve closet basin in which you can see that there is provision for the inspection and cleansing of the overflow trap without breaking the line of the flushing rim.

Fig. XXI.

Leaving these details for the present, I must now go on to that portion of the subject which deals with the cleansing of domestic drainage, excluding reference to flushing arrangements not applicable to the drain itself, because that would occupy more than the time of the present paper to deal with satisfactorily. Among the various cleansing appliances which have been introduced, there is none that is at all comparable in efficiency to that of Mr. Rogers Field's flush tank, with which his name has been so long and so honourably connected. The action of the syphon has been known to engineers for more than two thousand years, and the apparatus is particularly interesting because a treatise on the subject by an engineer has come down to us from periods absolutely silent upon engineering performances, which still remain inexplicable. Hiero, of Alexandria, in his treatise upon the syphon, no doubt was the collector of the inventions of others as well as an inventor himself; but the work has always appeared to me to possess a most unique and

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fascinating interest. It says all that the editor of a modern scientific journal would say in a popular description if the machines described had been invented last week, and one can only wish that other Hieros had come forward to describe with equal lucidity the method of building the pyramids, or of using the diamond rock drills which we have reason to believe were a popular contractor's tool in the days of the Ptolemies.

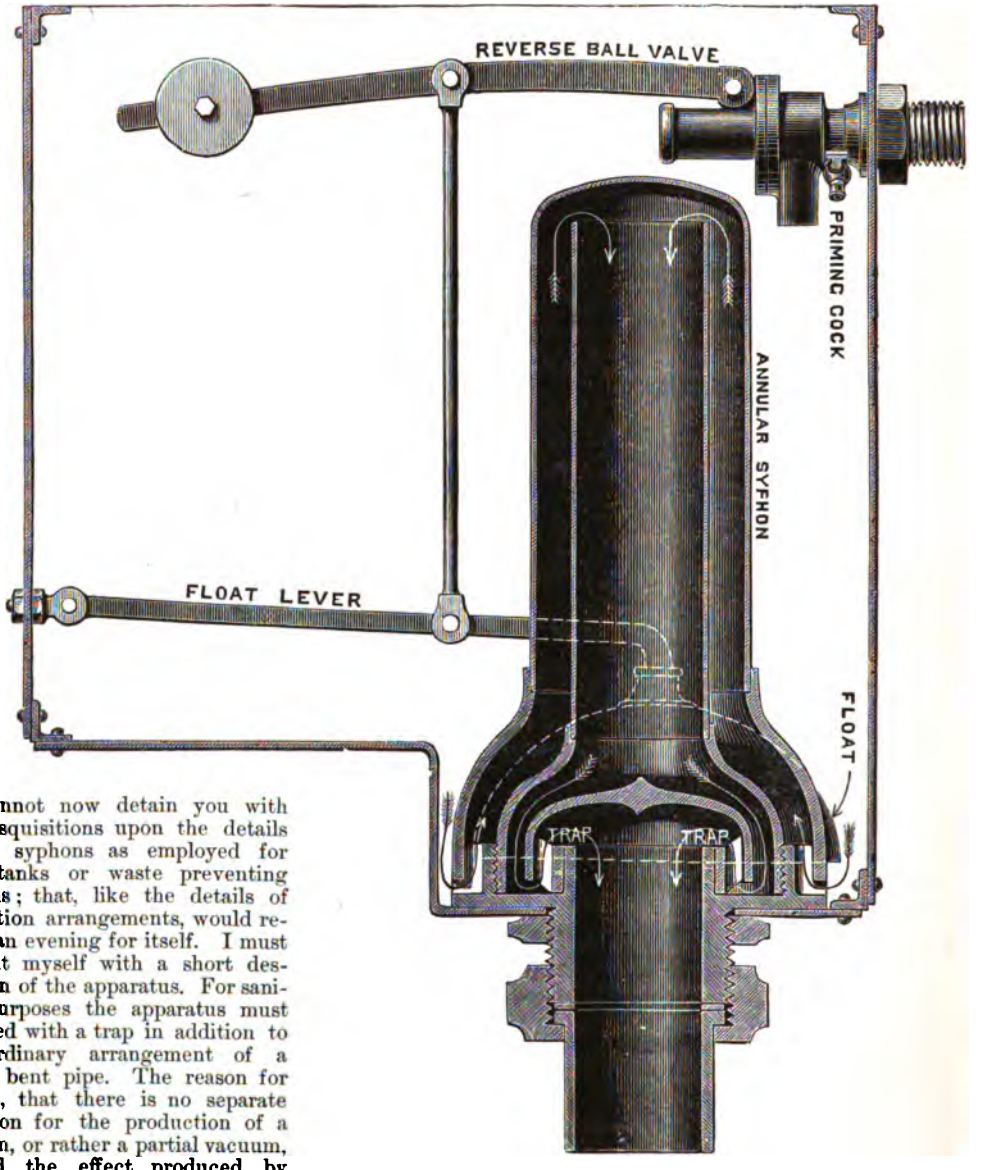

FIG. XXII.

I cannot now detain you with any disquisitions upon the details of the syphons as employed for flush tanks or waste preventing cisterns; that, like the details of inspection arrangements, would require an evening for itself. I must content myself with a short description of the apparatus. For sanitary purposes the apparatus must be fitted with a trap in addition to the ordinary arrangement of a simple bent pipe. The reason for this is, that there is no separate provision for the production of a vacuum, or rather a partial vacuum, beyond the effect produced by the flow of a fluid. When you suck the air from the long leg of a syphon, the necessary amount of vacuum is produced, and when water is violently forced over the head of the pipe, the same object is attained. By introducing a trap, it is obvious that not only the amount, but the supply of air to be removed is greatly limited, and what is required is only to remove so much of the air contained in the syphon between the fluid contents of the trap and the tank as will produce the required effect. The action of the syphon under these circumstances is somewhat obscure, because in nearly every case the resulting partial vacuum is obtained—first, by a displacing of the air by the fluid rising in the cistern; second, by an induced passage of air past the trap when the water begins to pass out; and third, by an entanglement of the air among the falling particles of water. Various attempts, more or less successful, have been made so as to arrange these conditions that the necessary vacuum is produced by the action of the smallest trickle of water passing into the tank; but as the whole operation can be made much more certain in its action by the use of an inverted ball valve which turns on a supply of water to insure the vacuum, I have always made

use of this very simple device when it lay in my power to do so.

One objection to the flush tank, as designed by Mr. Field and now generally used, has been the absence of any provision for cleansing the trap of the syphon and the pipes in connection with it a matter of considerable importance when dirty water is used for the purpose of flushing.

To obviate this I designed an annular syphon (Fig. XXI.), the inner tube of which is removable, as well as the outer one, the former being arranged like the standing waste of a cistern fitting in a ground conical socket. You will see how perfectly this attains the object I had in view, because in the case of a 3-inch pipe and trap the hand can be inserted bodily for the purpose of cleansing it.

In another arrangement (Fig. XXII.) you will see that instead of fixing the trap below the cistern, it is arranged in an annular form inside the syphon itself. This enables the whole of the parts to be taken to pieces for the purpose of cleansing and inspection, and another advantage is that it admits of being supplied from a hot-water service, a dribble of water first filling the well and turning on the hot water as the float rises. In this way the necessity for grease traps is done away with, including their objectionable accumulations, and everything is scoured away from the house drains into the sewers, the hot-water flush being set to go off at any required intervals of time. This arrangement, which I fixed at the Carlton Club, under Mr. Macoccai Anderson, is of great service in large establishments.

ON THE EFFECT OF TOWN LIFE ON THE GENERAL HEALTH, WITH ESPECIAL REFERENCE TO LONDON.

By J. P. WILLIAMS-FREEMAN, M.D., Lic. San. Sci., Durham.

(*Continued from page* 52.)

BUT it is in the next sanitary requisite, fresh air, that all towns must, from the nature of things, be deficient; the most important of all, from a hygienic point of view, and the one, unfortunately, which the ordinary individual values least. Food and water a municipal government can regulate and supply, but to ensure a sufficient supply of fresh air to the centre of many of our large towns would involve the clearing of large spaces already built over, the widening of many streets, and the reconstruction of most houses. The crying sanitary evils of great towns, the overcrowding, the infantile mortality, the large death-rate from respiratory diseases, the spread of zymotics, are all involved in this question of fresh air—nay, more, even the social evils of the day, the drunkenness, the decadence of skilled labour, and the increase of the "unemployed," are all, ultimately, to be traced in large measure to the loss of health on the part of the citizen, due to pollution of the air by reason of the density of the population. "Give me the density of your town," Dr. Farr is reported to have said, "and I will tell you your death-rate." And yet it is in the face of this that London permits open spaces to be built over, public halls and private buildings to be put up without adequate ventilation, the regulation as to curtilage to be evaded, and the atmosphere to be polluted by the smoke of three million chimneys.

The following table, compiled from Fox's *Sanitary Examinations of Air, Water, and Food*, shows the comparative analyses of pure country air and of town air:—

	Fresh Air.	Town Street Air.
Oxygen	209·8 vols per 1,000	209·35 (Perth)
Nitrogen	790·	P 790·
Carbonic acid ...	·296 (Montsouris)	·38 (London)
Albumenoid ammonia (mgr. per c. metre)... ...	·08	·15 ,,
Ozone	Present.	Absent.
Peroxide of hydrogen	Occasional.	,,
Nitrous acid ...	,,	,,

The differences are seen to be in the deficiency of oxygen and the excess of CO_2 and albumenoid ammonia, representing the nitrogen of organic matter. The deficiency of oxygen is in itself, perhaps, of little consequence, but there remains the fact that its place must be taken, as is insisted on by Fox, by some other body which is abnormal, and therefore presumably injurious. This difference amounts in the table above to 450 parts per million; 84 parts of this is filled up by the excess of CO_2, which is probably harmless, so that there remain 366 parts per million of foreign matter. Now, fully admitting that the data are of too uncertain a character to make the calculation of any value beyond that of an interesting illustration, let us assume, from the experiments of E. Smith, that "an ordinary tradesman" takes into his lungs 17·48 cubic metres in the twenty-four hours, and supposing that he breathes all day and night street air (certainly purer than the air of the houses would be), he would inhale no less than 366 cc. × 17·48 = 6,398 cc. of foreign matter, represented in English measure by 39 cubic inches, or rather more than a pint. Again, taking the amount of albumenoid ammonia as above to be ·15 mgr. per metre, the same man would take in, in the open streets of London, ·15 × 17·48 = 2·622 mgr. of it, as much as he would swallow if he drank 3·85 gallons of water, which should, according to Wanklyn, be "absolutely condemned" on the score of its albumenoid ammonia. The above analysis refers to average town air. When there is a fog in London the impurities are increased, as might be expected, to a very considerable degree. Dr. Russel has published the results of 29 experiments on air taken near St. Bartholomew's Hospital in every description of fog and mist, from "slight white" to "dense black." The average quantity of carbonic acid was ·72 vols per 1,000, the maximum of 1·41 being reached during a long-continued "dense black," and the minimum of ·45 occurring twice, once during a "slight" and once during a "slight yellow" variety of fog.

He claims that the carbonic acid in the air out-of-doors may probably be taken as an indicator of the other impurities, as well when it is the product of combustion as of respiration.

The following is a list of the added impurities of the air of a city; every one of them is present in the air of different parts of London:—

Gases.—Carbonic oxide (CO), hydrochloric acid, hydrofluoric acid, sulphuric acid, sulphurous acid, hydrogen sulphide, carburetted hydrogen (emanation from subsoil), bisulphide of carbon, animal exhalations of ill-defined nature.

Ammonia Salts.—Carbonate, chloride, nitrate, par-

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ticles of carbon, particles of sand, cotton fibres, starch granules, fragments of vegetable tissue, pollen grains, fungus spores, epithelium cells, bacteria, and last, but not least, "finely powdered excrement."

These together make up the 39 cubic inches of "matter in the wrong place," which a man takes into his mouth per diem. It is not long, therefore, before a dweller in a town gets his "peck of dirt." The subject of pollution of the air by sewer gas and cesspool emanations need hardly be discussed at length. The air of towns is probably never absolutely free from them; nor is often the air round and within houses in the country. The sulphuretted hydrogen, carburetted hydrogen, and albumenoid ammonia are the expression of them. But a good system of sewage disposal is scarcely beyond the reach of any English town, and though, generally speaking, the country is the best off, we may fairly consider that sewage, polluted air and water, are no longer necessarily associated with town life.

The last difference between the air of country and of towns is the absence from the latter of ozone, which is always present in the former, and also of peroxide of hydrogen and nitrous acid, which are occasionally present after storms. These three may by called nature's antiseptics in the air. The *rôle* of ozone in nature seems to be to give up its oxygen to organic matter and render it innocuous. It does this with the greatest readiness, so that one can scarcely wonder at its absence from the centre of such a town as London. The difficulties of ozonometry are well known, but no one who has lived in London can have failed to experience the difference between fresh country air and the London article, or the improvement in the "feel" of the air in a street of London when it is blowing a heavy gale of wind, and this is said to be due to the presence of ozone. Cautlie (*Degeneration amongst Londoners*) says, from experiments he made, that no ozone is to be found between the extreme N.E. and S.W. suburbs unless it is blowing very heavily, and even then that it does not get unchanged to the centre of the town.

I shall show later on that the death-rates of the London districts do not vary so much with the density of each district as one would, *primâ facie*, expect them to do, but show a much more distinct ratio to the nearness to the centre of the town. Is not this explanation the true one, viz. that no air reaches these districts that has not passed over acres of houses on its way; and been robbed of its ozone in the transit? The injury to health from want of fresh air shows itself most obviously as one would expect it to do in the respiratory diseases. The foul gases and high temperature of indoor air produce phthisis; and the irritation of the solid particles (to which also the London fogs are due), and the acrid fumes, cause diseases of the nose and throat, bronchitis, and other diseases of the respiratory organs. It is under this heading that one finds in towns the chief cause of the increased death-rate, and especially of the enormous infant mortality. Thus, phthisis and respiratory diseases together account for 24·59 deaths per 1,000 in infants under 5 in Liverpool as against only 11·01 in Cumberland, which has certainly no superiority to it as regards climate. The total death-rates from these causes at all ages being respectively 10·71 and 5·54. Again, comparing London and Hertfordshire, the death-rates, per 1,000 living, under 5, and at all ages, from phthisis and other respiratory diseases, are 17·02 and 7·11 in the town as against 9·23 and 4·64 in the country; and London and Liverpool are good towns to select, because in neither of them is the respiratory death-rate due to any notorious unhealthy trade, as might be said of Manchester or Sheffield.

The importance, also, of fresh air to general healthiness is most strikingly shown by the trade-mortality statistics of the Registrar-General.

The first four most healthy trades of all are:—

1. Gardeners, with a comparative mortality figure of	599
2. Farmers	631
3. Agricultural labourers	701
4. Fishermen (excluding violence) above average	712
The general mortality figure for all males of working age being	1,000

Then come hosiery manufacturers and Derbyshire miners, separated, it is true, at no great distance. It is to be noticed that these four first healthy trades comprise all amongst the trades investigated, which combine constant open air exercise and a country life.

There is one other condition of town life which requires notice, namely, the great want of natural daylight experienced by all classes, but especially by the poor and by those following indoor occupations. The influence of direct sunlight, as a preservative and even a restorative of health, has been believed in from very early times and probably not without reason. It is impossible to believe that man, or any other member of the animal kingdom, who has been suiting his physiology to his surroundings (of which sunlight has formed one) since the dawn of existence should be able suddenly to deprive himself, in great measure, of such an environment without suffering in some way or another; and it is not unlikely that the darkness of such a city as London, where artificial light of totally different actinic value is largely substituted for daylight, may have as much to do with the enfeebled vitality of its inhabitants as it has with their pale faces.

The effect of deficient light and of a constantly limited range of vision in producing myopia and hypermetropia needs only a passing mention.

Of all the influences that life in a large town brings to bear on the health of the individual the most difficult to estimate are those which may be called the moral sanitary surroundings. Yet nobody would for this reason think them unimportant. Side by side with over-crowding go poverty, drunkenness, crime, sexual immorality, and dirt, all having the closest connection with health, both as a cause and a result of the loss of it. Sexual immorality, indeed, and especially the prostitution of our large towns, of which, of course, the illegitimate birth-rate is no measure, seeing that it is the cause of all the spread of venereal disease, is probably the greatest single cause of ill-health in the country; and as the greatest causes of immorality, drunkenness, crowding together of the sexes, and want of exercise, are more prominent in the towns, so are immorality and venereal diseases also.

The crowding of the population into towns, then, brings with it many of the unavoidable causes of ill-health—the pollution of water, food, and air; darkness, physical and moral; dirt, poverty, and drink—and it is these that we summarize when we talk of the health of a town being affected by its density. The following table of the Registrar-General shows that a definite relation between density and death-rate does really exist.

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Death-rate and Density in Groups of Districts, 1871–80.

Annual Death-rate per 1,000.	No. of Districts.	Mean Density acres to persons.
14 and under 15	8	9·53
15 „ „ 16	31	3·20
16 „ „ 17	62	2·48
17 „ „ 18	102	3·04
18 „ „ 19	129	3·30
19 „ „ 20	95	2·94
20 „ „ 21	50	1·40
21 „ „ 22	46	0·95
22 „ „ 23	42	0·49
23 „ „ 24	30	0·35
24 „ „ 25	27	0·30
25 „ „ 26	14	0·23
26 „ „ 27	5	0·22
27 „ „ 34	6	0·10

It will be seen that the average density bears no definite relation to the average death-rate of the districts until there gets to be less than two acres to the person; that is to say, till the districts cease to be generally rural in character, after which the death-rate increases *pari passu* with the density. The late Dr. Farr, indeed, seeing that in 23 towns there was a density of 38 persons to an acre, suggested that bye-laws should be made prohibiting houses from construction so as to increase the density beyond this point. In attempting to estimate and compare in black and white the health of towns and country, we are met at the outset by the difficulty that no data are available to measure the amount of the minor ailments, and of what has been well termed the "second-rate health" of the population, and yet this factor in the comparison must by no means be neglected. The well-paved streets and the dryness of the soil probably protect him to a large extent from rheumatism, but the dyspepsia, anæmia, headaches, and general loss of health, from which nearly every denizen of London suffers more or less, are marked enough to lessen seriously both the usefulness and the enjoyment of life, though the death-rate of the city does not bring this aspect of the question before the public. Many of the sufferers who have spent a life of second-rate health in London withdraw from it only just in time to raise the death-rate of the neighbouring counties. And if it be objected that many people come up from the country to obtain medical advice and die in London, it can be answered that a large number of deaths occur in public institutions, which are filled from the metropolis though situated in the country. It is interesting to note, as bearing on this question, that, excluding the medical men on the staff of the teaching hospitals in London, there is in London one medical practitioner to 1,131 persons, while the proportion for the whole of England and Wales, including consultants, is 1 to 1,507. It would seem, therefore, that the doctor is more in demand in London than elsewhere.

For comparing the amount of sickness that is severe enough to disable the patient from following his occupation, we have the returns furnished by certain benefit societies in England, the most satisfactory perhaps being the well-known tables of Mr. Neison, of the mortality and sickness experience of the Ancient Order of Foresters for the five years 1871–75. Before drawing any inference from them, however, it should in fairness be stated that it is maintained by some of those best qualified to judge, that the sickness claims of benefit societies can only be taken as a measure of the scarcity of work that obtains at the time, and not as a measure of the amount of disease—still scarcity of work is probably at least as common in the country as the town—nor is malingering quite unknown in the rural districts.

The Foresters are very widely and evenly distributed throughout England, and include members of every variety of occupation both in town and country. The returns investigated were classified under the headings of rural, town, and city. "Courts" held in localities having less than 5,000 inhabitants were classified as *rural*; those in districts of 5,000 but less than 30,000 inhabitants as *town*; and all others as *city* courts.

The following table is taken from Mr. Neison's abstract, on page 37:—

Districts.	Total years of Life at risk.	Mortality per cent. per annum.	To every 100 members the number sick per annum.	The average weeks of sickness to every member sick per annum.
Rural districts	421,793	1·045	22·596	5·567
Town „	379,523	1·204	24·078	5·858
City „	500,850	1·365	23·691	5·926
The three districts combined	1,302,166	1·214	23·449	5·793

It will be seen that, comparing the Foresters in rural districts with those of the city districts, (1) their death-rate is 3·20 per 1,000 per annum less; (2) their sickness rate 11·09 per 1,000 per annum less: (3) should they fall sick they may expect ·359 of a week, or 2½ days' less illness in the year than their brethren of the city.

Turning now to the usual, and indeed the only, means of comparing mathematically the health of different districts—viz. the published death-rates—it is doubtful if they are by any means the accurate gauge of the public health that they are generally taken to be, especially by the lay public. To begin with, they give no measure of the amount of non-fatal sickness in a community. Next, there is the age-distribution of the population, which varies greatly in different districts, to be taken into account. This, however, is capable of being easily "corrected for" in any district when the death-rate for each age-period is given, and no statistics should be published without this correction. Town death-rates are almost always increased by correction for age, owing to the large number of persons in the prime of life and the small proportion of old people; whereas the death-rates of country districts are decreased by reason of the reverse being the case.

Thirdly, sex-distribution has some influence on the death-rates, and should be corrected for when comparing districts which are not of the same social character. This correction is not so simple as for age-distribution, and is practically usually neglected when quotations are made. The correcting factor should be calculated for each district, and the correction can then be easily applied to any death-rate before it is published.

However, the greatest fallacy in the death-rates of our large towns lies in the fact that they give no measure of the mortality amongst those who have been from their birth under the conditions of town life. The introduction of fresh blood from the rural districts which surround the great towns is very considerable, and largely exceeds their loss by emigration.

No figures are given in the census report which will enable one to calculate the immigration into any of the provincial great towns from the county in which it is situated; and it is from its own county that each town draws its largest supply of immigrants. But London being treated as a county in itself, the figures are given, and it appears that out of every 1,000 persons enumerated as being in London no less than 371 were country born, showing an immigration of 37 per cent.

This 37 per cent. are shown to pour into London chiefly between 15 and 25 years of age: young men and women at the most vigorous period of their lives; usually, as regards health, the pick of the country. The correction for age distribution makes allowance for the presence of extra numbers of persons at this healthy age period; but how can one estimate what would be the death-rate of London, if these extra persons were all Londoners, who had spent all their youth under the conditions of town existence instead of laying in a store of vigour in the healthy counties around it? In other words, how can one allow for the quality of the immigrants as well as for the quantity?

In his *Degeneration amongst Londoners*, Mr. Cantlie, late assistant-surgeon to Charing Cross Hospital, where he would be brought in contact with the Central Londoner, states that he searched for four years, without success, for a Londoner whose father, mother, and all four grandparents had been born and bred in London. The nearest approach to the specimen wanted were those who had had one country-bred grandparent. Of these he describes three. Here is his description of one who had a Somersetshire grandfather, but whose folks had lived in London commencing from the grandparents:—"Height, 5 ft. 1 in.; age, 21; chest measurement, 28 in.; head measure around above the eyebrows, 19 in. (nearly 3 in. below the average); measure across from tip of ear to tip of ear, 11 in. (1½ in. below the average). His aspect is waxy; he is very narrow between the eyes, and with a decided squint. Solemnity intense." He adds that he never came across the children of any such. He does not believe they survive.

This accusation against London, that its native inhabitants without constant intermarriage with country people undergo such rapid physical deterioration that they are unable to continue in existence, is so serious as to deserve more investigation than it has received.

It is unfortunately incapable of absolute proof or disproof, for it is from the nature of things extremely improbable that three generations of Londoners would successively choose consorts from amongst London-born individuals when there is such a large proportion of country-bred inhabitants between the ages of 15 and 25 to select from. Even amongst such well-defined communities as the Spitalfields weavers, the Clerkenwell watchmakers, and the Whitechapel Jews, it is found that immigration from the country and abroad takes place to a very large extent; and amongst the ordinary Londoners with whom one is brought in daily contact, one whose two parents have both been Londoners seems to me to be the exception rather than the rule. That the Londoner is, generally speaking, physically degenerate, no one can deny. To show that he cannot hold his own even on his own ground, Mr. Cantlie instances the Lord Mayors of London, only three of whom out of the last thirty mentioned in Orridge's account of them having been London born. The Metropolitan police, amongst whom a knowledge of London must be only less important than good physique and good character, are also very little recruited from amongst Londoners.

Exact measurements of the London bred would be interesting to show the extent of their physical deterioration. Contrasting the townsman generally with the countryman, the report of the Anthropometric Committee of the British Association of 1881 give the following results:—

The "median" measurements in the class of "Agricultural labourers, gardeners, miners, sailors, fishermen, &c.," between 30 and 35 years of age—

Height (745 observations)	-	67·5 inches.
Weight (700 „)	-	157·4 lbs.

Ditto for "artizans, workers in wood, metal, stone, engravers, printers, &c.," at the same ages—

Height (180 observations)	-	66·7 inches.
Weight (153 „)	-	146·6 lbs.

That towns unassisted by immigration do not increase from generation to generation as fast as the rural districts can also be shown by statistical evidence. Mr. Francis Galton, in a paper published in the *Journal of the Statistical Society* for 1874 has calculated that 1,000 families in rural districts supply 2,934 adults to the next generation, whereas the same number of town families supply only 1,796. That is to say, the supply of one generation to the next in towns is only 77 per cent. of what it is in the country: the supply to the second generation is reckoned in the same way to be 59 per cent. of the country supply.

Mr. Galton based his calculations on returns from the rural districts of Warwickshire, and from the town of Coventry. He used the Life-table for Manchester. Probably a similar calculation based on the vital statistics of urban London would show a difference not so well marked but still very considerable.

These two observed facts, physical degeneration and diminished increment in a population, which no doubt advance together, point unmistakeably to eventual extinction, so that it seems we must bring ourselves to look upon urban London as we do upon India, or the Straits Settlements, as a rich but unhealthy locality, where, with due care and precautions the well-to-do can remain during the working period of their lives in fair health and comfort, though with considerable risk, long enough, in fact, to gain or lose a fortune and return to their native country; but where children can only be brought up with great risk both to health and life, and where all attempts to settle permanently from generation to generation only result in rapid falling off, both physical and moral, and in early extinction of the race.

(To be continued.)

OVER-CROWDING AND TYPHOID AT CHINLEY.—Mr. C. J. Bennett, medical officer to the Sanitary Authority of the Chapel-en-le-Frith Union, has reported a serious outbreak of typhoid fever at Chinley, and several shocking cases of over-crowding owing to the navvies not being able to get houses. In one house there lived thirteen persons, five of whom slept in a room where typhoid fever patients lay, and in another house, which contained only two bedrooms, eight people lived, and a typhoid fever patient was in each bed-room. It was stated that some of the houses were so over-crowded that the beds were occupied day and night by workmen on the railway.

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THE

SANITARY RECORD.

The Organ of the Association of Public Sanitary Inspectors of Great Britain.

SEPTEMBER 16, 1889.

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The Editor will be glad to receive, for publication, announcements of meetings, reports of proceedings, and abstracts or originals of papers read at meetings of Medical Societies of Health, Public Analysts, and Sanitary Inspectors' Associations, &c.

Medical Officers of Health, Public Analysts, Town Clerks, Local Board Clerks, Sanitary Surveyors, and Inspectors, are requested to send Notices of Appointments and Vacancies to the Editor, care of Messrs. W. H. ALLEN & Co., 13 *Waterloo Place, S.W.*

THE SANITARY RECORD will in future be published by Messrs. W. H. ALLEN & Co., 13 Waterloo Place, S.W. All matters relating to the literary portion of the Journal, and all exchange journals, periodicals, books for review, and new inventions, should be addressed to the EDITOR at above address. All business communications relating to Advertisements, Subscriptions, &c., to be addressed to the MANAGER, at the same address.

THE NOTIFICATION OF INFECTIOUS DISEASES.

IT is a matter of no little surprise that an important Bill like the Infectious Diseases Notification Bill, which provoked so much discussion when first introduced, should have been rushed through its subsequent stages, at a time when Parliament was on the eve of adjournment, and when most of the members who take any kind of interest in the subject, including, we believe, all the medical members, were absent. This Bill, which has now become law, will, as we have already pointed out, extend to every London district, but its adoption will be optional on the part of other urban, rural, or sanitary authorities. The Bill makes it incumbent upon the head of any household where infectious disease shall exist, to notify the existence of the disease to the medical officer of the district, or in default of the head of the family, the nearest relative of the patient present in the building, or in default of the relative, every person in charge of, or in attendance on the patient; failing these, the occupier of the building, as soon as he becomes aware of the existence of the disease. The Bill also calls upon every medical officer attending on, or called in to visit a patient suffering from an infectious disease to send to the medical officer of health for the district a certificate stating the name of the patient, the situation of the building, the name of the head of the family or other person who appears to him to be primarily liable to give the notice under this Act to the medical officer, and the infectious disease from which, in the opinion of such medical practitioner, the patient is suffering. Every person required to give a notice of a certificate, and failing to do so, will be liable on summary conviction to a fine not exceeding 40s. The Act can be adopted by any urban, rural, or port sanitary authority by resolution passed at a meeting of the authority, such resolution to be published in a local newspaper, and by handbills, and a copy sent to the Local Government Board for approval.

THE METROPOLITAN SEWAGE QUESTION.

IN view of the necessity of prompt action being taken in regard to the urgent question of the disposal of metropolitan sewage, Sir Henry Roscoe issued a short time ago a concise history of the steps taken to improve the condition of the Thames since the year 1882. That year saw the appointment of the Royal Commission, with Lord Bramwell as Chairman, "to inquire into and report upon the system under which sewage is discharged into the Thames by the Metropolitan Board of Works; whether any evil effects result therefrom, and, in that case, what measures can be applied for remedying or preventing the same." The Commissioners issued their first Report in January 1884, in which they set forth their conclusions as to the above subjects of inquiry. They found that, "the evil effects resulting from the sewage discharge into the river Thames were real and serious, and such as to require remedying. That the evils and dangers are likely to increase with the increase of population in the districts drained. That above Greenwich and below Greenhithe the river does not afford ground for serious complaint. That between these limits the effects of the sewage are more or less apparent at all times. That in hot and dry weather there is serious nuisance and inconvenience, extending to a considerable distance below and above the outfalls, from the foul state of the water, consequent on the sewage discharge. The smell is very offensive, and the water is at times unusable (*i.e.* for washing the decks, &c., of vessels, and washing). That the river is not, at times, in the state in which such an important highway to a great capital, carrying so large a traffic, ought to be." Shortly after the issue of this Report, the Metropolitan Board of Works instructed their engineer and chemist to conduct experiments to ascertain the best means of treating sewage at the Metropolitan outfalls, with a view to its purification, and they were authorized to consult Dr. Dupré on the subject. They did not commence actual work till July, when they commenced deodorizing the sewage, first with bleaching powder, and then with manganate of soda. By September 30, 1884, they had expended £28,268, and to what good? None whatsoever. We then find that the Metropolitan Board, in its Annual Report of 1884, states that the Board, after carefully considering the conclusions of the Royal Commissioners, was unable to concur with them!

Before proceeding with the second part of their inquiry, the Commissioners ascertained whether the Board was prepared to tender evidence with respect to any method of dealing with the sewage, and received an answer in the negative. The Commissioners' second Report was presented on November 27, 1884, wherein they proceed to describe and to examine the various plans of disposal of sewage, which appear applicable to the circumstances of the Metropolis. These processes are six in number: (1) Broad irrigation; (2) Filtration through porous land; (3) Process of deposition or chemical precipitation;

(4) The last-named might be combined with a subsequent complete purification of the clarified sewage by applying it to land; (5) Removal of the outfalls lower down the river; (6) Removal of the outfalls to the sea. Since the issue of this second Report, how have the Board dealt with the sewage? They have endeavoured to effect purification first, by chemical precipitation; and secondly, by deodorization, and upon this they have expended £1,013,786 from 1884–1888, all of which is sheer waste. Sir Henry Roscoe states that the proposal of the Metropolitan Board of Works for the disposal of the sewage was based upon false principles; "first, as regards the addition of lime and iron in the proportions recommended; second, as regards the addition of manganate of soda to the effluent after precipitation in the quantities suggested; third, as regards the formation of underground settling tanks at Barking and Crossness; fourth, as regards pumping the sludge into tank steamers, and sending it out to sea." In spite of Sir Henry Roscoe, Sir Robert Rawlinson, and other eminent authorities acknowledging these works to be useless and wasteful, we find that the Main Drainage Committee of the London Council intend to pursue the erroneous course, and in the Council's Money Bill, now before Parliament, there is a special clause to enable the Council to expend money for the purpose of adding to, extending, enlarging, improving, and completing the works authorised by the Main Drainage Acts, including precipitation works and appliances, and vessels or barges for the removal of sludge, &c., such money not to exceed £211,000, in addition to any moneys which they are authorised to expend under any Acts passed previously to the Local Government Act, 1888. Sir Henry Roscoe's plan, and there are many who are of his opinion, is to prolong the main sewers right out towards the sea, utilising perhaps the low land of Canvey Island in the Thames, upon the Essex shore, and raising its level by continued applications of London sewage.

An important notice of motion in reference to the sewage question was down for some weeks on the agenda paper of the London Council, and when it was finally moved, the Chairman ruled that the motion was not in order, inasmuch as the Committee already had authority to do what was proposed. Londoners will await with interest their report. The motion was to this effect: "That it be referred to the Main Drainage Committee, so soon as the engineer enters upon his duties, to consider as to the advisability of engaging an engineer of high eminence (in concert with the Finance Committee) to join with him in an inquiry, and to report on the condition of the Northern and Southern Outfall Sewers, as to the general condition of the Thames at the outfall points, and to confer with the engineer of the Thames Conservancy, and to report on the necessity (if any) of further extension of outfalls (north and south), as to the best means of dealing on the evidence with the great question of removal of London sewage, and the probable cost of a complete and efficient scheme to purify the river; to remove the sewage and carry out what was designed by the Act of 1855 to meet the needs of London for the next fifty years; the financial operations incident thereto to be extended over eighty years." If the Committee are able to succeed in carrying out the proposals in this motion, Londoners should have no cause for complaint, but they will have to be prepared to spend a large sum of money in real, good, and lasting work. In the long run, however, it will repay the ratepayers, and they will have, moreover, the satisfaction of knowing that their money has been expended to some use.

To return once more to the question of deodorization, we find that in 1887 three questions were addressed to Sir Henry Roscoe. (1) Does the manganate deodorization process effect the required end? (2) Is the result attained by the use of the manganate commensurate with the cost incurred? (3) Is there any cheaper and equally efficacious process which can be adopted for the same end?

Sir H. Roscoe replied to No. 1 "That the quantity of manganate used in the sewers cannot affect the nature of the sewage at the outfalls, and also that the quantity added is quite insufficient to oxidise even a small part of the putrescent fæcal matter which gives rise to the emanations"; (2) "That an expenditure of over £40,000 a year is commensurate with the results obtained"; (3) "Bleaching powder and sulphuric acid would be cheaper, and probably be as efficacious as the manganate."

During the summers of 1887 and 1888 the sewage at both outfalls was deodorised under the advice and directions of Sir Henry Roscoe, with the result of a saving of about £56,714 for the two years to the Board. At the same time a scientific investigation as to the question of sewage treatment, with a discussion of the question as to the employment of deodorants, was published, from which we learned that the use of chemicals is only of value in so far that they either start a process of purification or simply get rid of the evil odour. Deodorization is only valuable in that it ensures the presence of a sufficient quantity of free, dissolved oxygen. The outlay of £40,000 a year on deodorants does not suffice to prevent a foul condition of the river during the summer months, and yet it is still intended to employ this process. Sooner or later we shall have to filter the sewage through land or discharge it into the estuary at a point not higher than the sea reach, therefore why not commence these means for overcoming the evil at once.

SMOKE ABATEMENT.

ALL who value pure air and generally healthy conditions of life, will feel that they owe a debt of gratitude to the Halifax Corporation for their intelligent and public-spirited attempt to reduce the ever-accumulating smoke cloud. It is, indeed, high time that some decided step should be taken to cope with this growing evil, and the wonder is that it should ever have been allowed to assume its present gigantic proportions, not only in Halifax, but in all the principal cities and towns of the kingdom.

The Halifax Improvement Act of 1823 provides—"that all furnaces employed in the working of engines by steam shall be constructed so as to consume their own smoke; and if any person or persons shall use any furnace for the purpose aforesaid, or shall negligently use any furnace for the purpose aforesaid so constructed, so as not effectually to consume the smoke thereof, and prevent the same occasioning any nuisance whatsoever, every such person or persons so offending, or the owner or occupier of every such furnace, shall forfeit and pay the sum of 20s. for, and in respect of, every week during which such furnace shall be so used."—The Halifax press has taken up the matter strongly, and in commenting favourably upon the action taken by the Corporation the *Halifax Courier* pertinently points out that nearly seventy years ago the Halifax local governing body acquired powers for dealing with the smoke nuisance.

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"showing that even then the evil was recognized, and the right to suppress it in the interests of the public was conferred, with the assumption that it could be done." It also plaintively remarks that "within the memory of many now living Beacon Hill was a fair sight to see, covered with moderate sized trees and thick underwood," and then we are told that "all this has been destroyed by the smoke from a thousand chimneys of factories, furnaces, the gas-works, and the houses." Unfortunately Halifax is not the only place where "a thousand chimneys" are producing their baleful effect. The wholesale destruction of vegetation on Beacon Hill, which is deplored, is but a specimen of what is taking place all around us.

The SANITARY RECORD has always been foremost among the advocates of the smoke abatement movement, and therefore we cordially sympathise with the Halifax Corporation and the local press in their efforts to bring about a reform. But while strongly advocating the reform and welcoming every effort to arouse the authorities and the public to its vast importance on hygienic and other grounds, a word of caution must be given to those too ardent supporters of the movement, who make sweeping assertions to the effect that the abolition of smoke must in all cases produce an immediate advantage in cash. Statements like this are calculated to seriously retard the progress of the movement, as they are not supported by facts. No doubt, in a broad sense, smokeless methods of obtaining heat are more economical than smoky ones, and it is also no doubt true that such a change of system as would secure the prevention of smoke would be pecuniarily profitable to the individual in many cases, while, of course, the result would be generally beneficial to the community. But, on the other hand, there are cases in which no pecuniary profit would follow directly from the abolition of smoke. Speaking generally, this would probably be the experience of a considerable number of the users of steam power at Halifax, where, having regard to the price and quality of the coal chiefly used and other local circumstances, there is a very narrow margin (if any) for effecting a saving in the coal bill, which is the only item generally taken into calculation. Indirect savings there would be, no doubt, to everyone in Halifax, if it were rendered materially less smoky than it is at present. But considerable *direct* savings in the coal bills of many of the works could not be expected, and, therefore, our contemporary's arguments to that extent are fallacious.

This, however, is altogether too narrow a way of regarding the question. The ground for this reform, as for others, must be the greatest good for the greatest number. It is sometimes pecuniarily profitable to a landlord to have the drains of his house set in thoroughly sanitary condition; sometimes he would make quite as much out of the house if the drains were anything but what they should be; but nobody would seriously suggest that for this reason landlords should be allowed to make their drains either sanitary or otherwise, as they might find profitable.

Another class of smoke abatement advocates who do more harm than good is that far too large class of persons who dogmatically assert that it is only necessary to use one or other of the countless patented apparatus in existence in order to satisfactorily abolish smoke. Acting under the influence produced by such statements, many persons are induced to pay a heavy price for some special apparatus warranted to prevent smoke, and after having the apparatus in action, they find that it does not prevent smoke from *their* furnace, and they at once conclude not only that the apparatus is bad, and that they have been defrauded, but that smoke abatement is altogether a delusion.

Those who have carefully studied the question in a practical manner, tell us that it is hardly possible to produce any single apparatus which will prevent smoke in *all* cases. And this seems obviously the common-sense view. The fact is the whole matter requires to be dealt with in a more intelligent and painstaking manner than hitherto; and each case of smoke nuisance should be considered and dealt with strictly on its own merits. Many flagrant cases of smoke production might be easily avoided without any structural alterations whatever, merely by the exercise of a little more care and intelligence in the selection or mode of burning the fuel.

Some advocates of smoke abatement urge that making the stokers or firemen responsible and subject to fines whenever smoke is found to issue from a chimney is all that is required to effect the reform. It may be admitted that this would be found effectual in many cases, but it would undoubtedly fail in many others. Moreover, it would be generally unfair, for much smoke unquestionably results from the fuel supplied by the master being unsuitable to the furnaces, or from the furnaces being forced to do more work than they are capable of doing without producing smoke. In neither case can the stoker be justly held responsible. Beyond this, stokers are not generally in a position to pay fines, and, therefore, practically, a works may cause an immense amount of smoke and no penalty be recoverable. Altogether, the balance of evidence is in favour of making the masters responsible and leaving them to deal with the faults of their men.

In Halifax and elsewhere the chief producers of smoke are the steam users and iron works, and there is abundant evidence available to prove that the smoke from both sources is entirely preventible. In respect of iron-works especially the most satisfactory results have been obtained without the production of smoke. Full details on this head were given in a letter addressed by the National Smoke Abatement Institution to the *Health Journal*, and subsequently published in the Annual Report of the Institution for the year 1887. The letter was called forth by the erroneous statements of correspondents in the Manchester and Salford press in commenting upon the action taken by the Salford Health Committee against certain smoke producers in that district. The National Smoke Abatement Institution offered in that instance to aid the prosecuting authorities by furnishing competent evidence as to the practicability of preventing smoke. The Institution stated that they were induced to make this proposal in view of the fact that in several cases the prosecution had fallen to the ground through the lack of such competent evidence.

We would urge upon the Halifax authorities the advisability of taking immediate steps to have cases of smoke nuisance tried before the Stipendiary magistrate, fortifying themselves with the aid of the Home Office authorities or Smoke Abatement Institution sufficiently to enable them to adduce the necessary evidence to support any prosecution which might be undertaken against smoke producers.

It is to be observed that smoke producers are more

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stringently dealt with in London than elsewhere, simply because the administration of the Smoke Acts rests with the police and the police magistrates, both acting independently of local interests and local bias. Local magistrates are frequently the largest smoke producers, and it is therefore obviously undesirable—nay, improper—that they should be invested with the power to adjudicate in any case of smoke nuisance.

NOTES OF THE MONTH.

POISONOUS DYED GARMENTS.

"No one should wear woollen or cotton stockings without previously washing and boiling them." This is the advice given by Dr. Weyl, who, at a recent discussion on the subject of poisonous dyed garments at the Berlin Medical Society, stated that he examined the remainder of a jersey which had given one of his patients a skin disease, and found the cuffs and collar to be dyed with imitation saffron, which as soon as it comes into contact with the human skin, turns it red. This dye is a coal tar product, and is used extensively in France and Italy to colour cordials, and more rarely for garments. Another doctor treated a lady who thought she suffered from blood poisoning. She complained of pain in her feet, and had a swelling and inflammatory discolouration up to the knee. The evil was traced to some blue-grey stockings she had herself knitted, and which proved to be dyed with indigo and sulphuric soda. In this case the acid must have set up the mischief, as the dye is harmless. Dr. Weyl's advice is sound, and should be followed.

CREMATION OF NIGHT-SOIL WITH COCOA-NUT COIR.

In a paper read at a meeting of the Ceylon Branch of the British Medical Association, the Health Officer of Ceylon recommends, after repeated experiments, the cremation of night-soil with coir dust. He finds that 2½ lbs. of coir dust suffice for deodorizing 1 lb. of solid and one gallon of liquid sewage, and believes that this method would be a feasible and economical system for adoption in all cocoa-nut producing countries, such as Ceylon, India, the West Indies, and South America.

TUBERCULOSIS IN MEAT.

We have before us the report of a trial heard at Glasgow, before Sheriff Berry, in which a butcher, named Cowper, and a meat salesman, named Moore, were charged, under the Scotch Public Health Act, with exposing for sale the carcases of a bullock and a cow which were unfit for human food. The proceedings were very lengthy, extending over five days, and a great deal of valuable scientific evidence seems to have been given. The case is important to sanitary authorities and the public generally, as the words of the Scotch Act are practically the same as those in force in England. The carcases in question were those of animals which were suffering from tuberculosis. The disease has long been recognised as one which renders the carcases of animals affected by it to some degree unfit for use as human food, but it generally has been considered sufficient to remove the parts immediately affected, and that the rest of the meat might be good enough. In the case in question, the lungs of the bullock and the lining of the body near them were clearly affected with tuberculosis, and the signs were even clearer in the lungs and udder of the cow; but the inspectors stated that the flesh of both animals was generally healthy, and, after the removal of the affected parts, would ordinarily have been passed as fit for food. A departmental committee of the Privy Council sat in the year 1887 to inquire into tuberculosis and other matters, and in their report, which was issued in July 1888, they stated that "the chance of the bacilli of tuberculosis being in the flesh or blood of animals affected by the disease was too probable to allow of the flesh of a tubercular animal being used for food under any circumstances, either for man or the lower animals." As a consequence of this report, instructions were given to the Glasgow sanitary inspectors to seize such carcases, and the present action was tried as a test case to see if such meat could properly be condemned. On the evidence before him, the learned Sheriff decided that parts of the animals in question which might ordinarily be sold for food were affected with tuberculosis—that is, that the disease had spread beyond the internal organs. He considered that it was proved that the practise of selling such meat was attended with danger to the public health, and he therefore felt constrained to condemn the carcases, although such meat would previously have been allowed to pass from the market for consumption in the ordinary way. The result of this judgment will, of course, be to render meat salesmen liable to penalties if they expose for sale in Glasgow—and probably in the Scotch markets generally—the carcases of animals which have suffered from tuberculosis. As yet, we believe, most English meat inspectors and medical officers have passed such carcases, if the immediately affected parts were removed, believing themselves powerless to prevent their sale. Such carcases, as long as this state of things continues, will be offered for English rather than Scotch consumption. The same result, however, ought to follow from proceedings in an English Court, if similar evidence of the danger likely to result from eating such meat were presented to it. It is satisfactory to know that only a small percentage of the cattle offered for sale are affected by tuberculosis, but the vendors of this small percentage should, as soon as possible, be made aware that its sale for human food can no longer be permitted.

MILK SUPPLY AND SANITATION.

Mr. Herbert Humphreys, Medical Superintendent of the Infectious Diseases Hospital for the Borough of Bradford, directs attention, in his last report, to the extremely faulty and dangerous method of distributing milk adopted throughout the country generally, and especially in our large towns. In the course of an inspection the wife of one milk-seller was found using a milk vessel for washing her baby, while another was utilising the milk cans in the washing of clothes. In a certain number of cases, bowls of milk were found on a counter or table where there were vegetables, remains of food, and unwashed dishes. In a few of the cases the milk was kept in the same room used as a living and sleeping room. Many of the smaller dealers were in the habit of keeping their milk cans outside the street door or in passages, where they were liable to all sorts of contamination. Mr. Humphreys, referring to the readiness with which milk takes up impurities, adds, "It appears to me altogether wrong that it should be sold from houses occupied, in some cases, by a large family of young children."

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THE PUBLIC HEALTH

During August 1889.

The mean temperature during the month of August at the Royal Observatory, Greenwich, was 60°·1, and was 0·7 below the average August temperature in one hundred years. An excess of temperature prevailed on only eight days during the month, while on the remaining twenty-three days it was below the average. The warmest day of the month was the 1st, when the mean was as high as 70°·3, and showed an excess of 7°·7; the coolest day was the 12th, when the mean was only 53°·7, and 8°·9 below the average. Rain was measured on fourteen days during the month under notice, to the aggregate amount of 1·8 inches, which was 0·6 of an inch below the average for the corresponding period in sixty-one years. During the first eight months of the current quarter the rainfall has amounted to 15·4 inches, which was 0·4 of an inch below the average amount in the corresponding periods of sixty-one years. The sun was above the horizon during 449·1 hours in August, but only 170·0 hours of bright sunshine were recorded at Greenwich, which was below the average amount registered in the corresponding months of the ten preceding years. The wind was south-westerly throughout the month.

In the twenty-eight large English towns dealt with by the Registrar-General in his weekly return, which have an estimated population of upwards of 9,500,000 persons, 21,916 births and 13,198 deaths were registered during the four weeks ending Saturday, August 31. The annual birth-rate, which had declined from 31·9 to 30·6 per 1,000 in the three preceding months, further declined to 29·9 during the month under notice, and was considerably below the average rate in the corresponding periods of the seven preceding years, 1882–88. The lowest birth-rates last month in these 28 towns were 22·8 in Huddersfield, 24·5 in Brighton, and 24·9 in Oldham; in the other towns the rates ranged upwards to 35·5 in Sunderland, 35·8 in Preston, 39·0 in Cardiff, and 39·6 in Newcastle-upon-Tyne. In London the birth-rate last month was equal to 29·0 per 1,000, while it averaged 30·7 in the 27 provincial towns.

The annual death-rate in the 28 towns, which had been 17·1 and 20·4 per 1,000 in the two preceding months, declined again to 18·0 during the month under notice, and was as much as 3·5 per 1,000 below the average rate in the corresponding periods of the seven preceding years, 1882–88. The lowest rate of mortality in these towns was 11·7 per 1,000 in Derby. The rates in the other towns, ranged in order from the lowest, were as follow: Oldham, 14·7; Brighton, 15·2; London, 15·7; Nottingham, 16·1; Huddersfield, 16·3; Leicester, 16·6; Bristol, 17·1; Norwich, 17·5; Bradford, 17·7; Birmingham, 18·3; Salford, 18·3; Halifax, 18·3; Portsmouth, 18·8; Liverpool, 19·1; Leeds, 19·2; Bolton, 19·5; Cardiff, 20·5; Birkenhead, 20·6; Sheffield, 21·6; Blackburn, 22·1; Wolverhampton, 22·6; Hull, 23·6; Manchester, 23·8; Sunderland, 26·0; Newcastle-upon-Tyne, 28·4; Plymouth, 29·0; and the highest rate during the month, 32·1 in Preston. The mean death-rate in the 27 provincial towns was 19·9 per 1,000, while in London, as before stated, the rate did not exceed 15·7 per 1,000. The 13,198 deaths from all causes in the 28 towns during the four weeks of August included 1,793 from diarrhœa, 225 from whooping-cough, 216 from measles, 206 from scarlet fever, 193 from diphtheria, 141 from "fever" (principally enteric), and 1 from small-pox; in all, 2,775 deaths were referred to these principal zymotic diseases, equal to an annual rate of 3·8 per 1,000, which was considerably below the average for the corresponding periods of the seven preceding years, 1882–88. The death-rate in London last month from the principal zymotic diseases was equal to 2·7 per 1,000, while in the 27 provincial towns it averaged 4·7, and ranged from 1·8 in Halifax, 1·9 in Oldham, and 2·3 in Bristol, to 6·5 in Wolverhampton, 7·9 in Sunderland, 11·2 in Plymouth, and 13·0 in Preston.

Diarrhœa was the most fatal zymotic disease in the 28 towns during the month under notice. The rate of mortality from this disease, which had increased from 0·22 to 3·26 per 1,000 during the four preceding months, declined again to 2·45 during August, and was below the average in the corresponding periods of the seven preceding years, 1882–88. In London the death-rate from diarrhœa was only 1·56 per 1,000, while it averaged 3·19 in the 27 provincial towns, and was equal to 4·6 in Leicester and in Wolverhampton, 4·8 in Hull, 5·5 in Sunderland, and 7·9 in Preston. The rate of mortality from whooping-cough, which had declined from 0·69 to 0·42 per 1,000 in the four previous months, further fell to 0·31 during August, and was considerably below the average in the corresponding periods of the seven preceding years, 1882–88. In London the whooping-cough death-rate was 0·23 per 1,000, while it averaged 0·37 in the 27 provincial towns, among which this disease showed the highest proportional fatality in Bradford, Birkenhead, and Sunderland. The death-rate from measles, which had steadily declined in the five preceding months from 0·97 to 0·52 per 1,000, further fell to 0·29 during the month under notice, and was below that recorded in the corresponding month of any of the seven preceding years. In London the rate of mortality from this disease was only 0·16 per 1,000, while in the 27 provincial towns it averaged 0·41, and was highest in Bradford, Halifax, and Preston. The death-rate from scarlet fever, which had been 0·24 and 0·30 per 1,000 in the two preceding months, declined again to 0·28 during August, and was 0·06 below the average rate in the corresponding periods of the seven previous years, 1882–88. In London the death-rate from scarlet fever was 0·21 per 1,000, while it averaged 0·18 in the provincial towns, among which this disease showed the highest proportional fatality in Huddersfield and Plymouth. The rate of mortality from diphtheria, which had risen from 0·19 to 0·29 per 1,000 in the three preceding months, declined to 0·26 during the month under notice, but considerably exceeded that recorded in the corresponding period of any of the seven preceding years. In London the diphtheria death-rate was as high as 0·40 per 1,000, while in the 27 provincial towns it averaged 0·15 per 1,000, and was highest in Plymouth. The death-rate from "fever," which had been 0·15 and 0·19 per 1,000 in the two preceding months, was again 0·19 during August, and, with one exception, was below that recorded in the corresponding period of any of the seven preceding years, 1882–88. In London the rate of mortality from "fever" did not exceed 0·12 per 1,000, while it averaged 0·25 in the 27 provincial towns, among which the highest proportional fatality of fever occurred in Birkenhead and Preston. One fatal case of small-pox was recorded during the month under notice in Leeds, but not 1 in London or in any other of the 28 large towns; and no small-pox patients were under treatment during August in any of the metropolitan asylum hospitals.

The rate of infant mortality in the 28 towns, measured by the proportion of deaths under 1 year of age to registered births, which had increased from 180 to 248 in the three preceding months, declined during August to 207, which was below the average rate in the corresponding periods of the seven preceding years. In London the rate of infant mortality did not exceed 169 per 1,000, while it averaged 237 in the 27 provincial towns, and ranged from 144 in Derby, and 158 in Oldham, to 243 in Birmingham, 298 in Leicester, 302 in Hull, 304 in Sunderland, and 402 in Preston.

The death-rate from diseases of the respiratory organs, judged by the metropolitan returns, was below the average during August. The weekly number of deaths referred to these diseases in London averaged 144, and the annual death-rate was equal to 1·7 per 1,000.

The causes of 278 of the 13,198 deaths registered in the 28 towns during the four weeks of August were not certified, either by registered medical practitioners or by

coroners. These uncertified deaths were equal to 2·1 per cent. of the total deaths, which was slightly below the proportions in recent months. In London the proportion of uncertified deaths was 0·8 per cent., while in the 27 provincial towns it averaged 3·0 per cent. The causes of all the deaths during last month were certified in Wolverhampton, and only 1 was uncertified in Norwich, Derby, and Cardiff; among the other towns the largest proportions of uncertified deaths were recorded in Sheffield, Liverpool, Huddersfield, and Halifax.

Among the population living in the outer ring of suburban districts around London, estimated at upwards of 1,250,000 persons, the annual death-rate from all causes during August did not exceed 14·3 per 1,000, and was considerably below the average in the corresponding periods of the seven preceding years. During the four weeks ending August 31, 180 fatal cases of diarrhœa, 31 of whooping-cough, 16 of diphtheria, 13 of scarlet fever, 13 of "fever" (principally enteric), 8 of measles, and not 1 of small-pox, were recorded in the outer ring; in all, 261 deaths resulted from these principal zymotic diseases, equal to an annual rate of 2·6 per 1,000, which was considerably below the average in the corresponding periods of recent years. Compared with the preceding month, the fatality of measles and diphtheria showed a marked decline, while that of scarlet fever showed a slight increase. Of the 180 deaths from diarrhœa, 31 occurred in West Ham, and 16 in Edmonton sub-districts. The 16 fatal cases of diphtheria included 2 in Tottenham sub-district; 3 deaths from scarlet fever occurred in West Ham sub-district, and 4 of measles in Harrow sub-district.

NOTIFICATION OF INFECTIOUS DISEASES

IN 41 URBAN SANITARY DISTRICTS.

THE table on page 111 contains uniform statistics relating to sickness and mortality in forty-one of the fifty-six urban sanitary districts of England and Scotland in which the notification of infectious diseases is compulsory. The population of the towns for which we are enabled to publish complete statistics for the month of August is estimated at upwards of four millions of persons. The annual rate of mortality from all causes in these towns during the month under notice averaged 17 8 per 1,000, against 18·3 and 18·4 in the two preceding months. This death-rate almost corresponded with the mean rate last month in twenty-eight of the largest English towns, which was 18·0 per 1,000. The rates of mortality during the month under notice were considerably below the average in Derby, Guildford, Leek, Reading, Aberdeen, Darwen, Burton-on-Trent,; while they showed an excess in Manchester, Burnley, Preston, and Jarrow. The death-rate from the eight infectious diseases dealt with in the table averaged 0·65 per 1,000, against 0·54 and 0·66 in the two preceding months. No deaths from any of these infectious diseases were registered during last month in Aberdeen, Ashton-under-Lyne, Darwen, Guildford, Heywood, Macclesfield, Ripon, Llanelly, Stafford, or Weymouth; whereas they caused the highest death-rates in Manchester, Huddersfield, Salford, Jarrow, Burnley, and Preston. Scarlet fever showed the highest proportional fatality in Salford, Burnley, and Huddersfield; diphtheria in Edinburgh; enteric fever in Preston; measles in Bradford, Halifax, and Preston; whooping-cough in Birkenhead, Portsmouth, and York; and diarrhœa in Nottingham, York, Leicester, Norwich, Burnley, Preston, and Jarrow. With reference to the notified cases of infectious diseases in these towns during August, it appears that the proportion of the population reported to be suffering from one or other of the eight diseases specified in the accompanying table was equal to 6·4 per 1,000, against 4·4 and 5·1 in the two preceding months. No case of any of these diseases was reported during the month under notice in Ripon, and only one in Guildford, in Leek, and in Weymouth: and while the proportion did not exceed 1·5 per 1,000 in Heywood, Reading, and Stafford, it ranged upwards in the other towns to 9·2 in Edinburgh, 9·4 in Preston and in York, 10·7 in Portsmouth, 10·8 in Bolton, 11·5 in Salford, and 14·0 in Burnley. Scarlet fever was proportionally most prevalent in Edinburgh, Greenock, Manchester, Portsmouth, Salford, Burnley, and Bolton; diphtheria in Bury, Edinburgh, Manchester, Norwich and Salford; and enteric fever in Birkenhead, Norwich, Nottingham, Portsmouth, Salford, Burnley, Preston, and York. One case of small-pox was notified during the month in Leek, and one in Oldham.

THE Public Health (Cholera Prevention) Bill has passed into law.

THERE were 58 candidates for the post of medical officer of health for the County of Westmoreland, to which Mr. Craven has been appointed. The salary is £375 per annum.

PLUMBERS' WORK.—The undermentioned articles, made by the students in the Plumbing class at the Merchant Venturers' Technical School, Bristol, are now exhibited there :—

Nos. 1 to 9 Prize Works executed at local test examination (time allowed 4 hours).

1. Piece of 5-lbs. sheet lead, bossed to a given shape, James C. Wilson.
2. Two pieces of 3-in. lead pipe, joined by an upright soldered joint, James C. Wilson.
3. Two pieces of ½-in. lead pipe, joined by an underhand wiped soldered joint at a given angle, James C. Wilson.
4. Similar piece of Work, Albert E. King.
5. " " " "
6. " " " "
7. " " Charles N. Payne.
8. " " " "
9. " " " "
10. Piece of 3-in. 8-lbs. drawn lead barrel, bent to fit a given position, with an astragal joint and lead ears, Walter Jas. Wreford.
11. An offset in 4-in. 7-lbs. lead barrel, to fit over a plinth with raking branch to receive closet trap, Walter Jas. Wreford.
12. Piece of work showing method of treating the soil, branch, and ventilation pipes, in connection with a valve-closet, with an anti-D trap attached, James C. Wilson.
13. Hand-made 7-lbs. lead P trap, James C. Wilson.
14. Piece of 5-lbs. sheet lead, bossed to a given shape, with internal and external angles, James C. Wilson.
15. Ditto. ditto. Thomas Gaskell.
16. Lavatory range, composed of 1½-in. traps, waste and ventilation pipes, illustrating method of treatment. Thomas Gaskell.
17. Piece of 7-lbs. sheet lead, bossed to a given shape for a cesspool, W. F. Pillinger.
18. 3-in. double bend in 7-lbs. drawn lead pipe, W. F. Pillinger.
19. Two-gallon lead service box, with valve and air pipe, soldered complete, Charles N. Payne.
20. 4-in. double bend in 7-lbs. drawn lead pipe, Frank Bowen.
21. Illustrated book of home-work, Henry Sydenham.

It is found that periodical exhibitions of the work of apprentices and journeymen plumbers tend to create healthy emulation, and to increase attendances at the classes, where instruction is given in the theoretical as well as the practical branches of plumbing. The teacher of the class is Mr. W. H. Perry, R.P.C., who some years ago obtained the freedom of the Plumbers' Company upon passing 1st in honours at the City and Guilds examination. The Plumbers' Company award prizes in connection with the classes at Bristol.

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Table showing Sickness and Mortality in Large Towns of England and Scotland during the Month of August 1889.

Towns.	Estimated Population middle of 1889.	Small-pox.		Scarlet Fever.		Diphtheria.		Typhus Fever.		Enteric Fever.		Cholera.		Relapsing Fever.		Puerperal Fever.		Totals of Preceding Columns.		Annual Rate per 1,000 Persons Living.		Deaths from other Zymotic Diseases.				Total Mortality from all Causes per 1,000 Persons Living.
		Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Ill-defined Fever.	Measles.	Whooping-cough.	Diarrhœa.	
Aberdeen	121,448	—	—	4	—	5	—	—	—	8	—	—	—	—	—	—	—	17	—	1·6	—	—	9	1	4	13·6
Accrington	39,000	—	—	13	1	2	1	—	—	1	—	—	—	—	—	—	—	16	2	4·8	0·6	—	—	3	7	14·8
Ashton-under-Lyne	40,488	—	—	3	—	3	—	—	—	2	—	—	—	—	—	—	—	8	—	2·4	—	—	1	—	8	19·1
Barrow-in-Furness	50,000	—	—	4	—	—	—	—	—	5	2	—	—	—	—	—	—	9	2	2·1	0·5	—	3	1	5	[illegible]
Birkenhead	102,300	—	—	6	—	—	1	—	—	20	1	—	—	—	—	—	—	32	2	3·7	0·7	—	—	8	14	16·9
Blackburn	122,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Blackpool	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bolton	114,670	—	—	77	3	6	3	2	—	10	2	—	—	—	—	—	—	95	8	10·8	0·9	—	3	4	24	19·8
Bradford	235,056	—	—	48	6	2	1	—	—	28	7	—	—	—	—	—	—	78	14	4·3	0·8	—	20	15	35	17·7
Burnley	80,000	—	—	46	5	2	2	—	—	38	2	—	—	—	—	—	—	86	9	14·0	1·5	—	4	—	48	20·9
Burton-on-Trent	47,493	—	—	7	—	3	1	—	—	3	—	—	—	—	—	—	—	13	1	3·2	0·2	—	—	—	8	13·9
Bury	60,359	—	—	2	—	6	3	—	—	3	1	—	—	1	—	—	—	12	4	2·1	0·7	—	—	1	18	17·8
Chadderton	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Chester	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Croydon	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Darwen	34,500	—	—	8	—	—	—	—	—	2	—	—	—	—	—	—	—	10	—	3·5	—	—	—	7	3	13·7
Derby	98,525	—	—	53	3	1	—	—	—	6	—	—	—	—	—	—	—	60	3	7·9	0·4	—	1	1	17	11·7
Dewsbury	33,000	—	—	12	1	1	—	—	—	2	1	—	—	—	—	—	—	15	2	5·4	0·7	1	1	—	6	16·1
Dundee	163,300	—	—	13	—	6	6	—	—	11	2	—	—	—	—	—	—	30	8	2·2	0·6	—	—	11	20	15·9
Edinburgh	266,900	—	—	144	4	23	10	1	—	40	5	—	—	—	—	—	—	208	19	9·2	0·8	—	8	8	16	14·0
Greenock	78,248	—	—	38	—	2	2	1	—	5	1	—	—	—	—	—	—	46	3	7·7	0·5	—	—	2	6	14·7
Guildford	13,428	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	1	—	0·9	—	—	—	—	—	12·3
Halifax	81,200	—	—	8	2	1	—	—	—	3	—	—	—	1	—	—	—	13	2	2·1	0·3	—	12	—	—	20·0
Hartlepool	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Heywood	25,000	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	1	—	1·4	—	—	—	—	5	14·1
Huddersfield	92,825	—	—	38	6	2	1	—	—	9	—	—	—	2	—	—	—	49	7	6·9	1·0	—	2	2	4	16·0
Jarrow	31,000	—	—	10	1	2	2	—	—	—	—	—	—	—	—	—	—	12	3	5·1	1·3	—	1	—	21	35·8
Kingstn.-on-Thames	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Lancaster	27,740	—	—	3	1	2	—	—	—	2	—	—	—	—	—	—	—	7	1	3·0	0·4	—	—	2	6	20·3
Leek	13,700	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	1	1	0·9	0·9	—	—	—	—	12·9
Leicester	150,520	—	—	20	2	7	—	—	—	12	4	—	—	—	—	—	—	39	6	3·4	0·5	—	1	1	53	16·6
Llandudno	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Llanelly	22,828	—	—	8	—	—	—	—	—	—	—	—	—	—	—	—	—	8	—	4·1	—	—	—	1	3	13·9
Macclesfield	37,514	—	—	8	—	—	—	—	—	—	—	—	—	—	—	—	—	8	—	2·8	—	—	—	—	9	16·7
Manchester	378,800	—	—	210	11	49	13	—	—	39	12	—	—	—	—	—	1	298	37	8·2	1·0	—	17	14	139	24·0
Nelson	16,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Newcastle-on-Tyne	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Norwich	94,510	—	—	5	—	12	2	—	—	23	—	—	—	—	—	—	—	40	2	5·5	0·3	—	—	—	35	17·5
Nottingham	237,812	—	—	74	2	4	—	—	—	54	5	—	—	—	—	—	—	132	7	7·2	0·4	—	2	2	78	16·1
Oldham	142,405	1	—	59	1	2	—	—	—	2	1	—	—	—	—	—	—	64	2	5·9	0·2	—	1	9	10	14·7
Portsmouth	141,254	—	—	71	—	9	2	—	—	36	2	—	—	—	—	—	—	116	4	10·7	0·4	—	—	11	34	18·9
Preston	104,194	—	—	17	2	9	3	—	—	68	11	—	—	—	—	1	1	94	17	9·4	1·7	—	35	5	90	33·6
Reading	60,654	—	—	—	—	—	—	—	—	4	1	—	—	—	—	1	—	5	1	1·1	0·2	—	1	2	3	13·5
Ripon	7,670	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	15·4
Rotherham	36,482	—	—	13	2	—	—	—	—	3	—	—	—	—	—	—	—	16	2	4·6	0·6	—	—	—	—	19·2
Salford	234,283	—	—	106	11	47	6	—	—	54	5	—	—	—	—	—	—	207	22	11·5	1·2	—	—	3	62	18·3
Stafford	20,600	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	2	—	1·1	—	—	—	—	3	19·5
Stalybridge	27,938	—	—	5	—	1	1	—	—	1	—	—	—	—	—	—	—	7	1	3·3	0·5	—	—	—	2	20·1
Sunderland	134,193	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Torquay	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Wakefield	33,360	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Warrington	48,200	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
West Ham	180,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Weymouth	14,008	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	1	—	0·8	—	—	—	—	2	15·9
Willesden	52,915	—	—	17	—	3	1	—	—	2	1	—	—	—	—	—	—	22	2	4·3	0·4	—	—	1	17	15·2
York	75,327	—	—	14	—	1	1	—	—	38	2	—	—	—	—	1	1	54	4	9·4	0·7	—	—	9	28	18·9

SPECIAL REPORTS, ABSTRACTS, &c.

MEETING OF THE BRITISH MEDICAL ASSOCIATION IN LEEDS.*

Proceedings in the Section of Public Medicine.

Medical Officers of Health: Their Training and the Conditions on which they should Hold Office.

By E. Ballard, M.D., F.R.S., Medical Inspector, Local Government Board.

Since the last occasion on which it was my privilege to attend an annual meeting of this Association a very proper step with respect to the sectional meetings has been taken by the council. They have relieved the presidents of sections from the duty or task of preparing and delivering an introductory address. To me, selected as your president this year, the step is a source of personal rejoicing, and I congratulate you, gentlemen, also, on having been protected from an infliction which would assuredly have put a strain upon your habitual courtesy. But, as things turned out, neither you nor I have come to be let off quite so easily as I anticipated; since, notwithstanding that a formal address has been dispensed with, I have been requested to introduce, by means of a written paper, the first subject on our agenda. The subject relates to "Medical Officers of Health: their Training, and the Conditions on which they should hold Office"—a subject which just now has been brought into prominence by a recent statute, and by the promise of further legislation in the same direction. It is not for me, holding the official position that I do, either to criticise past action of Parliament or to forecast the future, but it is clear that public interest has been aroused. It is equally clear that there is abundant room for the expression of both professional and non-professional opinion as to what should be further done, and what the relation should be between county and district councils and their respective sanitary officers on the one hand, and between the latter and the central sanitary authority of the kingdom on the other hand. I mention this, not because I shall take any part in the discussion, but because I am sure that these relations have occupied your thoughts, and because it is not to be expected, in a meeting of Englishmen, that what is labouring in their minds will fail to be delivered in words. For myself, I may say that I have never posed as a medical reformer, nor taken any active part in medical politics. In respect of all such subjects I occupy, and intend to occupy, the stool of the learner.

For a good many years of my life, as most of you probably know, I filled the post of medical officer of health in one of the largest of the metropolitan districts, and for a good many years since have been in relation, official or otherwise, with gentlemen holding a similar post in all parts of the country, both in urban districts and in rural districts. In this way I have necessarily made a very considerable number of acquaintances, and formed, I am most happy to add, not a few personal friendships, among the medical officers of health of England; and, somehow, very many of these professional acquaintances and friends have been led, for some reasons best known to themselves, to make me the recipient of their confidences, their anxieties, and their professional troubles. So, what with my own experience, and what with hearing the experience of others, I think I know something of what it is to be a medical officer of health. I shall make use of both these kinds of experience in what I am about to say. I will be as brief as possible in saying it, and I shall confine myself to one branch of the subject by endeavouring to reply to the question, What are the requisites for a good and efficient medical officer of health?

First, then, he must possess himself of due learning. What I mean by this, of course, is that his mind must be specially stored with that kind of learning which shall fit him to deal with and to advise about disease, not as it affects the individual, but as it affects the community. It goes without saying that, as communities are made up of individuals, a knowledge of disease as it affects individuals is the basis of the knowledge of disease as it affects communities, and this is the reason why an officer of health to be efficient must be a medical man. *Nihil humanum a me alienum puto* is the motto which every practitioner of the art of medicine appropriately adopts; *Nihil mundanum a me alienum puto* should be the motto of every medical officer of health. No knowledge—I was going to say in Heaven above—certainly on the earth beneath, comes amiss to him. He has to deal often with complex problems, to solve which his mind cannot be too well furnished, and furnished with information that the ordinary practitioner of the healing art has little or no call for. Let me instance such branches of knowledge as these: meteorology, geology, sewer and water engineering, the construction of houses, the ventilation of private and public buildings; or, to pass to living things, bacteriology, the subtle and often tortuous path of epidemic contagia, the physical and sometimes moral peculiarities of race, and even the pathology of animals lower than man in the scale of creation, but domesticated for his use. I need not prolong this list. When medical officers of health were first appointed in this country the necessity for special knowledge was scarcely recognized; but a considerable step was made when it was recognized that an officer of health should be medical. As I speak to-day the necessity for special knowledge has obtained recognition by Parliament; this is another great step in advance, and not only so, but in the great schools of medicine in England, Scotland, and Ireland provision has been made for giving requisite special instruction.

Secondly, to make a man an efficient health officer he requires to be trained. The requisite science he may be taught, but the art is only to be acquired by practising it and by watching others practise it. It is the same with preventive as with curative medicine. The physican does not learn his art in the lecture-room, but in the hospital; so the health officer learns his either slowly and laboriously, with many mistakes and even some blundering in striving to carry on his duties, or he may take the shorter road of working practically for a season under the direction or supervision of another. It is the same with all professions, a good theologian would make but a sorry parish priest unless he had been well drilled in parish work. What is now needed to supplement the scientific instruction of the future health officer is the same sort of practical training under a medical officer of health that men entering other professions and the curative branch of the medical profession get before they are permitted to exercise them. Judging from some reported proceedings of the Medical Council, and some discussions that occurred during their last session, an opinion of this kind appears to have found expression there. I hope that at their next session some regulation pertaining to this subject will be formulated. It is a subject that requires to be dealt with, and no doubt will be dealt with thoughtfully and with discrimination.

Lastly, I may mention "tact"—an acquisition of rare value, but one the possession or lack of which may make all the difference between the successful and the inefficient medical officer of health. To such an officer, all his learning and all his training will avail him little unless, at the same time, he has learned the inestimable art of dealing patiently but firmly with men—with men who have not always the intellectual culture that he possesses, who see the same things that he sees, but with differently coloured spectacles, and from altogether a different viewpoint. Deficiency in tact is a fault chiefly observable among the junior members of the confraternity. Anxious to serve their district, earnest, and enthusiastic, they chafe at obstacles which they find impenetrable, and are ready to give up a strife which, over and over again, ter-

* An address delivered at the opening of the Section of Public Medicine, at the Fifty-seventh Annual Meeting of the British Medical Association, held in Leeds, August 1889.

minates in their discomfiture. It is men of this stamp (and they are not always—I say it with bated breath—young men) that I hear perpetually calling out for central interference. They mistake their position and functions, and are wanting in a very cardinal virtue. They forget that they are advisers, not administrators; that good and proper as their advice may be, there may be difficulties not apparent to them in at once pursuing it—trifling difficulties, possibly, in their eyes when they are pointed out, and unworthy of regard in view of the advantages to be gained by their disregard, but, nevertheless, serious difficulties in the eyes of other people. A medical officer of health is not an autocrat; it was never intended that he should be one. Often and often it has happened that health officers, who have made this mistake, have sought my condolence with them in the tribulation they have thus brought upon themselves. They all get from me pretty much the same advice. It is this: Be patient, bear with the infirmities of your weaker and less instructed brethren. Keep your own conscience clear amidst all discouragement by carrying out your duties to the best of your ability, and leave other people to look after theirs. Recollect that the rope you are tethered with is public opinion—the public opinion locally prevalent; that if you want to be more free, to get more of your own way, you can only do it by educating public opinion; you must turn schoolmaster. You will do no good but much harm by scolding those who appear to be stupid. You must be patient; and in the end, by the tedious process of line upon line and precept upon precept, you will, perhaps, attain your object. And to assist yourselves to wait patiently for results, to save yourselves from the misery of grizzling over the opposition you encounter, divert your thoughts into scientific channels. Nature is never unkind to such as in the proper way seek to learn her secrets; she never disappoints, never vexes, never discourages. To the medical officer of health working in the baldest rural district, as well as to him who labours in the crowded town, she holds an open gate, and says: "Treasure is hidden here; my servants are contented and happy; come and dig."

Discussion.

Dr. G. E. J. GREENE (medical officer of health, Ferns, Ireland) thought that the chief reason why a medical officer to a dispensary district in Ireland, who was also a medical officer of health, was frequently found to perform his sanitary work in an imperfect manner was because it was often financially to his advantage to be "sanitarily amaurotic," especially when he who permitted a nuisance to exist was a well-to-do patient. Medical officers of health should possess a diploma in sanitary science, obtained by passing a Government examination in analytical chemistry, botany, geology, pathology, and sanitary engineering; should hold jurisdiction over a large area; be appointed by, and draw their pay from, Government, which pay should be sufficient to support them without their engaging in any other occupation; should not engage in private practice; and should have the option of promotion to a better district after some years' service. The Parliamentary Bills Committee of the British Medical Association might have a Bill, containing some of the most practical points in this paper, introduced next Session into Parliament.

Dr. GRIMSHAW (Registrar-General of Ireland) wrote saying that, had he been present, he had intended to advocate a system of organization of public health officers on the Irish system. He was strongly in favour of combining in one person the offices of poor-law officer, public vaccinator, district medical officer of health, and registrar of births and deaths. Such a civil medical service was the foundation upon which the whole State medical system should rest, only there should be independent offices, say for counties and groups of unions. There should be inspectors, then superintendent officers for counties, and then again the really active officer who combined all the offices together. He thought a local officer should not require so high a qualification as the county officer or the combined union officer.

Dr. JOHN BROWN (Bacup) said the medical officer of health was a specialist of the highest order. His duties were the conservation of the health of the community and the prevention of disease. The medical officer of health for large districts whose time was entirely devoted to his work ought by age, experience, and high attainments in sanitary science to be held in high esteem, and to have the fullest confidence of his medical *confrères*. No one should be under 25 years of age, and probably 30 would be better for the more important positions for county councils. Cases of difficult diagnosis, where a mistake might involve the town in a serious epidemic, were of frequent occurrence. The medical officer of health should be able to command the confidence of his medical *confrères*, and be called in to assist in the diagnosis; therefore, it was desirable that he should have had considerable experience in general practice and special facilities, by attending fever hospitals, to assist in cases of doubtful or difficult diagnosis. He should have practical knowledge of the analysis of water and air, and how to detect the more common adulterations of food, although no one would expect him to be a thorough analytical chemist. He should be able to make a complete qualitative and quantitative analysis of water, so far as it regards the detection of those organic substances, and salts show the water had been polluted with sewage or other organic matter. In some epidemics of enteric fever, unless the water was examined just after its pollution, by the time the circumstances were reported to the Health Committee, the water might be perfectly free from organic matter, as the following case proved. Some months since, he (the speaker) analysed the water supply of a hamlet where a serious epidemic of enteric fever had occurred. The circumstances, apart from analysis of the water, clearly proved that the water supply was the source. The analysis which he made showed organic pollution of the water, the source of which was proven. The circumstances were reported. The Health Committee decided that a sample should be taken and forwarded to the county analyst. His analysis failed to detect organic pollution, and no action could be taken to close the supply. The consumers, however, acted on his advice, and no harm came of it. The further pollution was prevented. In cases like this the medical officer of health ought to be able to perform the analysis, and county councils ought to provide laboratories and all the necessary apparatus for water analysis. To be able to do this, considerable experience in practical chemistry was absolutely necessary, and every medical officer of health should have at least three months' course in a laboratory under a skilled analytical chemist. He should also be trained in the practical duties of the office, so as to obtain tact, method, &c. There ought to be appointed by the Local Government Board a medical officer of health, holding a public appointment for a county council or large borough, who, by his experience and scientific attainments, was well qualified to train men in the practical duties of their onerous and responsible work. These officially appointed tutors should have facilities for giving practical instruction on the construction and uses of instruments used in meteorological observations; also for giving practical demonstrations on the various methods of ventilation, lighting, construction of sewers, various methods of treatment of sewage, disposal of towns' refuse, examination of meat, fish, &c. He should also be trained in bacteriology, and should attend a course of practical demonstrations in the use of the microscope in adulterations of food, examination of micro-organisms, parasites in meat, &c. So far as possible set lectures should be avoided, and everything should be taught by practical demonstrations. He should also understand geology, and ought to learn the special features of the geology of the district of which he may happen to be the medical officer of health. The conditions on which medical officers of health now held office were scan-

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dalously unsatisfactory. If faithful in the discharge of the duties, they might have to resign, submit to reduction of salaries, increase of duties without extra pay, as in some cases in which the medical officer of health had been appointed surgeon to a fever hospital, and if not accepted must resign, or subjected to many petty annoyances because he had the ill-will of one or more of the committee. The following conditions were necessary in order that the highest interests of the public might be served:—1. Fixity of tenure, so long as the medical officer of health was able to discharge his duties. 2. Salary in county councils and large populations should be such as to secure the very best men; £500 per annum should be the minimum. This could scarcely be considered a high salary when one considered that the medical officer of health had spent considerable time and money in gaining the special knowledge required, and was debarred from private practice, and, moreover, had no claim for pension for long service, or any claim for permanent disablement by sickness, &c., acquired or contracted in the discharge of his duties. Besides, he exposed his life and health to special dangers which might prematurely cut short his career. 3. Salaries should be placed by the Local Government Board at a fixed minimum; for large districts (county councils) this might not be necessary in all cases; but in small towns and rural authorities the salary was absurd; only young men, newly qualified, would hold them, and, as a rule, little or nothing was expected to be done. These remarks applied to many parts of England, and to nearly every place in Ireland. Also there should be a fixed minimum of increase for every five or seven years that the appointment had been held. This would be conducive to the best interests of the public. The medical officer of health would be more likely to remain and serve the public to the best of his ability, and the experience gained would not be lost. 4. The Local Government Board should be a court of appeal as to matters of dispute, so that it would be impossible to discharge the medical officer of health without their consent, or roduce his salary, or to impose any duties which are contrary to the principles of justice and honour.

Dr. CALDWELL SMITH (Glasgow) remarked that, as a teacher of hygiene, he would like to say something regarding the training of medical officers of health. It was now necessary that medical officers of health should possess a qualification in public health, but the General Medical Council had passed a resolution to the effect that such qualification would not be registrable unless after six months' analytical work in a laboratory, as well as six months under a medical officer of health for a large area. In regard to the former, he had to demur somewhat; he thought a better system would be for the Council to insist that all examining bodies should require attendance at lectures on hygiene before entering for the examination. Such course of lectures should necessarily include analysis in all its bearings on public health. He did not think that a medical officer of health should be public analyst, although he ought to be able to perform and interpret analysis, as if he held such office it was apt to produce much friction with some classes of the community. In regard to tenure of office, he was glad to state that in Scotland they were in advance of their English brethren, as in the Local Government Bill for Scotland, no medical officer of health under the county council could be dismissed from office without the consent of the central authority for Scotland, namely, the Board of Supervision for Scotland. He thought that this section of the Association should petition Government to pass a supplemental Bill to the English Local Government Bill to obtain such tenure of office. He might state that Dr. Wallace, of Greenock, was the only medical officer of health that he knew who could be deposed from office only with the consent of one of Her Majesty's Secretaries of State.

Dr. LITTLEJOHN (Edinburgh) referred to the admirable address to which they had listened, and he emphasised the importance of "tact" in the discharge of sanitary duties. He agreed with the last speaker, that the medical officer of health should not also hold the office of public analyst. The chemistry of adulteration was making such rapid advances, and the delicacy of chemical analysis was becoming so great as to render it impossible for an active medical officer to overtake in a satisfactory manner his ordinary official work, and at the same time conduct analyses. As to tenure of office, thanks to the action of this powerful Association, coupled with the remonstrances of the profession in Scotland, Government had lately conceded the great act of justice in rendering it impossible for any local authority to dismiss the medical officer without the sanction of our Local Government Board. In large centres of population, this security was not so much required as there; a medical officer should, if at all capable, and gifted with common-sense, so commend his work to the community as to render his position absolutely secure. It was in smaller areas with annual appointments that the injustice was chiefly felt. As to Dr. Grimshaw's suggestions, he regarded them as admirable, and he quite approved of the conjunction of various public offices, as this secured a more respectable salary. The rule should be the dissociation of public sanitary duties from private practice, and until this rule was made absolute, it would be impossible to prevent what is so much to be deprecated, namely, friction with our medical brethren, which already has done so much to hamper the efficient discharge of sanitary duties.

Mr. ALDERMAN EMSLEY did not agree with the speakers as to a medical officer of health being also appointed registrar of births and deaths, public vaccinator, and medical officer for guardians. In Leeds it would be impossible to follow that suggestion. In the Borough of Leeds there were four poor-law unions, and if a medical officer of health were appointed for each union, a proper salary would have to be paid: the officer ought not and could not attend to private practice in Leeds. Only last week it was proposed in the Leeds Corporation that a medical officer of health should be appointed for each union at a salary of £250 a year each. This resolution did not pass, as it would be impossible to obtain men at such a salary who could properly perform the duties. He objected to having the medical officer irremovable except with the consent of the Local Government Board. The corporation were surely better able to decide as to the necessity of discharging the medical officer of health than an official sent down by the Local Government Board. In Leeds they had not found centralization in many cases work well for the town. Leeds had a high death-rate; this no doubt was caused to a great extent by the congestion of cottage houses in old parts of the town, and also by the pollution of the River Aire, which passed through the town. If the chairman would give them any information regarding their powers for the removal of these nuisances they would not regret the visit of the Medical Association.

Mr. ALLFREY gave the meeting his experience—derived from twenty-five years' experience in general practice, and as poor-law medical officer and public vaccinator. He advocated the absolute independence of the medical officer of health from private practice, and spoke in favour of combining the offices of medical officer of health—union medical officer and public vaccinator—in one person, as advocated by Dr. Grimshaw.

Dr. GEORGE DE'ATH (medical officer of health for Buckingham) suggested that, though medical officers of health should of course be independent of private practice, it would be only making enemies of private practitioners to take their poor-law medical work away, and attach it to public health work. Their present experience of a satisfactory salary to a medical officer of health, who was only a medical officer of health, was not encouraging. Much could be done in time, but in the meanwhile the Local Government Board, which inspected the work of vaccination officers, might also periodically inspect the work of health officers, and also

their districts, using as fully and freely as possible their powers and influence to make both health officers and local authorities do their duty and use their powers.

Dr. B. A. WHITELEGGE said the medical officer of health was simply the adviser of the sanitary authority, and beyond that the responsibility for actions of the latter did not rest upon him. He should have a competent knowledge of chemistry and of certain branches of law and engineering, but should always have the advantage of the co-operation of professed experts in those matters. The tenure of office should at least be equal in security to that of poor-law medical officers, but the system of annual or even triennial election was far less secure than simple tenure subject to notice. Registration of births and deaths came legitimately within the sphere of the medical officer of health, and he had already to obtain and classify such returns; but there were other duties now grouped with this work of registration which would scarcely be congenial. He would view with great regret any relaxation of the present supervision of the Local Government Board, which was of the greatest possible service to local medical officers of health. The duties of the medical officers of the county councils were as yet undefined, but on a smaller scale the councils would in some measure supply the place of the Local Government Board, and their officers, being brought into intimate relations with the local medical officer of health, would have a wide field of useful work.

Mr. J. BINSLEY JAMES said every medical officer of health should be apprenticed to a medical officer of health to gain the experience necessary for that office. He should not practice as a medical practitioner, but give the whole of his time to his office, and be well qualified in every branch of medical service and applied sciences; and receive proper salary to keep him above bribery and corruption.

Mr. W. HOLDER, speaking as a member of the profession and a member of a municipal corporation, said that in the training of medical officers of health the student should have acquired a fair knowledge of chemistry and applied science in his studies for matriculation examination. Then a year passed under a general practitioner, and afterwards a pupilage in the office of a medical officer of health, was essential that he might gain a knowledge of how to acquire and distribute statistical work, learn how to submit his opinions to governing committees, and submit with grace for a proper time to be repressed in his zeal on a question for which public opinion is not yet ripe. He could not but think that the position of medical officer of health was a comparatively new one, and that the growth of public opinion and municipal pay was not altogether unsatisfactory in towns, viewed in the light of its growing importance. In Hull, he would point out, the medical officer was greatly appreciated, had a reasonable salary, and was appointed, not subject to instant dismissal, but appointed for so long as he maintained good behaviour. His opinion was one highly valued, and he was treated with the highest respect. He instanced Hull and these matters because the reason why the position in Hull was so reasonably satisfactory was that the emotional feeling of the public had been guided into proper lines by a number of members of the profession, who had accepted their duty as civilians and sought positions on the councils of their corporations, where they had given to the corporation the advice which their technical training fitted them to give to non-professional councillors who, in his experience, were only too glad to do right when they were convinced and knew the importance and truth of the steps they were taking. In Hull, Sir H. Cooper, an old president of this Association, and Dr. Kelburn King had done great work in this corporation work, and their influence was great and would be abiding, and he urged members of the profession to enter into this useful work as much for the benefit of the people as for the profession.

Surgeon-Major POOLE remarked that it seemed to him that the science of public health was becoming too much of a speciality, especially as they heard of one gentleman speaking of the necessity of a medical student intending to follow out the special calling of medical officer of health undergoing an apprenticeship to some such officer. The tendency of the present day was to specialize, and this tendency should be resisted, and appointments made from among the well-qualified general practitioners, provided they had, if possible, the diploma of public health.

Dr. OGILVIE GRANT wished to state that he attached great importance to and urged the necessity of medical officers of health first being for some time general practitioners, and by contact with all classes learning that tact so necessary for the discharge of their duties. Unlike the majority of medical officers of health he had been trained as a civil engineer, but he attached very little importance to this training in comparison with the experience he had acquired as a general practitioner.

Dr. MAJOR GREENWOOD said that the position of medical officer of health would be much improved if more members of the profession took an interest in local matters, and deigned to come forward as candidates for places on the sanitary boards of their districts; that in his own district, an important metropolitan one, with a population of over 150,000, on a board of 120 members, he was the only medical representative, and that far from getting any encouragement from neighbouring practitioners, he was rather rebuked for having anything to do with local matters; that often, when endeavouring to promote sanitary reform in his district, he sadly missed the presence of other medical men on his board, and that he felt sure that a greater leaven of members of the profession on the sanitary authorities throughout the country would make a world of difference in the position of medical officers of health, both as to their influence for the public good and in insuring them a proper remuneration for their services.

Mr. J. S. LOE considered that all medical officers of health should possess special qualifications for the office, that no medical man should be appointed without this special sanitary knowledge, and as in obtaining this knowledge many years' work may be required, it was, therefore, only fair that the appointment should be for life, and that he should not be subject to dismissal from any personal feeling that might arise during the discharge of his duties, but that, in the event of just cause or complaint, the matter should be referred to the Local Government Board, which only should have the power of dismissal.

Dr. BALLARD, replying on the discussion, said it did not follow that because the Irish system was successful in Ireland it would suit England. In his experience he found that local authorities very often did not appreciate a man as a medical adviser but simply as an inspector of nuisances, which was not the position of a medical officer at all. He was quite sure that that section would not wish in any way to advise or suggest anything in the present condition of the medical affairs of Leeds. It was only general principles he thought on which they could say a word. One point raised by Alderman Emsley was that of cutting up a large town into small districts, and giving to the medical officer for each a small salary. That idea would never do either in Leeds or any other large district: unless a medical officer had time and opportunity to progress he was almost useless. The rivers pollution question, he thought, was dealt with under the new Act.

Resolution as to Tenure of Office of Medical Officers of Health.

Dr. CALDWELL SMITH moved the following resolution:—

That in the English Local Government Bill a clause should be inserted providing that no medical officer of health shall be dismissed without the consent of the Local Government Board, and also that in regard to the appointment of medical officers the word "shall" should be substituted for "may" in the Local Government Bill.

Mr. LOE (Leeds) seconded, and the resolution was adopted. It was also agreed to thank the Parliamentary

University of Glasgow

Committee for their efforts to secure the recognition of the principle embodied in the resolution when the Bill was before Parliament.

Notes of a peculiar Teat-Eruption in a Milch Cow, coincident with an outbreak of Typhoid Fever amongst the Consumers of the Milk.

By A. M. Anderson, M.D., Medical Officer of Health, Dundee.

Since Mr. Power's report to the Local Government Board on the Hendon cow disease and its connection with scarlatina in the human subject, and Dr. Klein's experimental inquiries thereupon, the diseases affecting the udder and teats of milch cows have acquired considerable interest for medical practitioners. For the present the conclusions arrived at must be regarded as provisional, and I submit the following notes as a contribution towards the study of the subject.

With the view of showing wherein this Dundee cow disease differs from previously recorded teat affections in its character, duration, and supposed effects on the human subject, I will briefly state the leading characteristics of the Hendon cow disease, the Wiltshire cow disease, and the Edinburgh cow disease.

1. The Hendon cow disease, or cow scarlatina, whether of spontaneous origin, or induced by inoculation of the streptococcus scarlatinæ, is, according to Dr. Klein, characterised by an eruptive and ulcerative affection of the teats and udder, followed by some similar and general affection of the skin, and, in some cases, a pulmonary disorder was discoverable during life. At *post-mortem* examination there was found disease of the lungs, pleura, pericardium, lymph glands, spleen, and kidney. During life the ulcers, which are covered by red-brown crusts, show a marked tendency to healing after from several days to a week or two. The animal becomes emaciated, the skin scurfy, and the hair falls off in patches.

2. The Wiltshire cow disease, which, in Professor Crookshank's opinion, is true Jennerian cow-pox, and which Dr. Klein regards as suppurative mastitis, is characterised by a contagious ulcerative disease of the teats and udder, with an absence of the visceral lesions and constitutional symptoms observed in the Hendon cow disease. The sores are more flat and superficial, the scabs adherent to base during three or four weeks; the sores are readily transmitted to man, which the Hendon sores are not, and the use of the milk did not cause scarlatina in the human subject.

3. The Edinburgh cow disease was characterised by a contagious ulcerative disease of the teats and udder, the sores being small, circumscribed, raised above the surface, their bases considerably infiltrated, and showing a tendency to heal very rapidly. In other respects the animal affected was healthy. There occurred amongst the consumers of the milk an outbreak of febrile disorder, lasting only a few days, and associated with severe sore-throat and inflammation of the cervical glands, but no scarlatinal rash and no diphtheritic membranes were observed.

4. The Dundee cow disease was discovered from the inquiries made by the Sanitary Department into every case of infectious disease notified under the provisions of the Dundee Police Act, 1882, one of the points ascertained and recorded being the source of the milk supply. I observed that in February, March, and April last, an outbreak of typhoid fever occurred amongst the customers of one particular dairy in Dundee, and the most searching inquiries failed to find any trace of disease amongst the persons handling the milk or in their households. I am satisfied this milk did not acquire infection from the human subject.

The prevalence of typhoid fever in Dundee during recent months was as follows: 1888, Oct., 8 cases; Nov., 8 cases; Dec., 8 cases. 1889, Jan., 10 cases; Feb., 3 cases; March, 5 cases; April, 20 cases; May, 6 cases; June (to 10th inst.), 6 cases. Of these cases, there occurred amongst the customers of the one particular dairy 2 cases in February, 3 cases in March, 10 in the first fifteen days of April, 3 in the last half of April, 5 in the first fifteen days of May, and none since, nor to date August 6. From February 1 to April 15 the total number of typhoid cases reported for the whole city was 21, of whom 15 used milk from this particular dairy; and from April 15 to June 10 the total number reported was 24, of whom only 8 used the suspected milk. From these facts it is evident that the spread of typhoid fever infection amongst the persons using milk from this dairy was greatly checked after April 15, and apparently ceased altogether after May 15; and, having regard to the incubation period of the disease, it may be fairly maintained, although not conclusively proved, that the eight cases which occurred between April 15 and May 15, were caused by infected milk consumed prior to the former date, and that the milk was wholly non-infectious after April 15.

Now, was any measure adopted on April 15 in connection with this milk supply to which one may reasonably attribute the subsequent non-infective character of the milk? There were two measures adopted: 1. The drain leading from the cow-shed to the main sewer in the street was found to be defective and untrapped, and the work of renewing and trapping it was commenced on May 6 and finished on May 25. 2. On April 15, the sanitary inspector and myself examined the teats and udders of all the 23 cows which supplied the suspected milk. On one of the cows we found an eruptive disease on each of the four teats, presenting the appearance of ring-worm, level in the centre, the margin raised, thickened, and excoriated, without scab, or crust, or infiltration of the base; the eruption on the inner side of the left hind teat being nearly circular, and about the size of a shilling; those on the other teats being apparently of longer standing and encircling the whole teat, so as to present, not a circular eruption, but a raised, thickened, freely excoriated edge. There was no eruption on the udder, nor on the body. The cow appeared to be in perfect health, with a fine coat. Its history, as to which the dairyman is not quite sure, is that he bought it in the Dundee Cattle Market about the end of December last; it calved in the middle of January; its milk was sold daily with the rest, and he could not say when the teat-eruption appeared. Under the directions of the sanitary inspector and myself, this cow was isolated from the rest on April 15, since when it has been milked by the cattle-man, who does not milk the other cows; its milk has been used for feeding young calves, none of it being sold or distributed to the public. From the time this cow was isolated until now (June 10), a period of eight weeks, I have frequently examined it. It appears to be in perfect health and is getting fatter every week. The eruption on the left hind teat is getting larger than at April 15, and is still well marked; those on the other teats appear to be slowly healing, the margins being less raised, not so thick under the finger, with much less excoriation, so that the edges are fainter and not so readily recognisable. There has been no crust or scab on the eruptions, which are still confined to the teats, and no similar eruption has appeared on any of the other cows nor on the cattle-man.

I may say that we found one cow with a slight excoriation on one of her teats; she was isolated for a few days, during which the excoriation completely healed. A third cow, recently calved, we found isolated on April 15. She appeared to suffer from suppurative mastitis, with ulcers on the teats and general emaciation. She is still isolated and appears to be getting better, but, as her milk was not at any time distributed to the public, she cannot be regarded as a factor in causing the infectious disease.

Professor Frankland, of University College, made cultivations from the eruption of the first-mentioned Dundee cow, and I send herewith a water-colour illustration of the eruption, which may be compared with illustrations of the Hendon, Wiltshire, and Edinburgh cow disease, as shown in the Local Government Board's report for 1887.

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Dr. CALDWELL SMITH remarked that he was afraid that Dr. Anderson had not proved his case. He did not seem to have had the opinion of a veterinary surgeon on the question, and it was more than probable that the untrapped drain had more to do with it than the cow. Between typhoid and scarlet fever the poor cow was having a bad time of it, and it behoved them to prove their case before fixing on the cow as the cause of the propagation of zymotic disease. Dr. Smith mentioned the case of an epidemic of scarlet fever when the cows were suspected, and ulcers similar to those in the Edinburgh cow disease were found. The cows were isolated, and a calf fed, but with negative results. On further investigation it was found that the dairymaid had been infected by a girl coming to the farm for milk while desquamating, and there could be no doubt that all the cases arose from this cause, and that the cow was not the *fons et origo mali*.

A DISCUSSION ON DISINFECTION AND ISOLATION: WITH SPECIAL REFERENCE TO CONTROL OF EPIDEMICS.

I.—By H. FRANKLIN PARSONS, M.D.

The invitation of my friend and colleague, the president of the Public Medicine Section, must be my excuse for submitting to the section, as a text for discussion, the following remarks on disinfection with reference to the control of epidemics.

By disinfection I mean the destruction of infection—the destroying of the activity of that matter which, produced by a sick person and received into the system of a healthy one, has the power of causing in the latter a disease similar to that from which the former was suffering. In popular language the word disinfection is used to include the use of substances ("deodorants") which destroy offensive odours, and "antiseptics" which prevent or retard putrefaction, but I shall employ it in its strict etymological sense.

What, then, is the nature of this infective matter which in the interests of the public health we seek to destroy? It is known that it is organic matter, and particulate—that is, solid, not liquid or gaseous matter, although the fine colourless particles of which it is composed may be freely suspended in both water and air. There is reason also to believe that it is in all cases living matter, and consists of microscopic vegetable organisms. The analogy between the life history of infectious fevers and that of the yeast plant in a saccharine solution long ago suggested to Liebig this view—a view embodied in the term "zymotic," often applied to such diseases. Modern research has shown that certain diseases in men and animals are undoubtedly caused by the presence in the system of micro-organisms, and are communicable by the inoculation of such organisms. Among these I may mention two acute febrile diseases, namely, anthrax and relapsing fever: acute suppuration and various forms of septicæmia; the chronic diseases, tuberculosis and leprosy; also fowl cholera and infectious pneumo-enteritis of the pig, "swine fever." The last-named disease has an interesting resemblance to the common human infectious disorders, in that the contagium may be transmitted through the air, and attaches itself to places in which the affected animals are kept. In other diseases, as Asiatic cholera, scarlatina, diphtheria, and enteric fever, certain micro-organisms have been found and have been looked upon with more or less probability as the cause of the disease; but the connection is not perhaps as yet completely established, mainly owing to the difficulty of testing it by the results of inoculation on animals. In other infectious diseases, again, as small-pox, measles, and whooping-cough, no such organism has, I believe, as yet been identified; but we may probably, for our present purpose, without much risk of error, assume the *materies morbi* in these also to be a living organism. This assumption furnishes us with a practical means of testing the efficacy of the agents we employ to destroy infection. It is in most cases not practicable to test directly the effect of our disinfecting agents upon the contagia of the ordinary infectious diseases of mankind, for the reason that we cannot make the necessary experiments (including control experiments with undisinfected portions of material) upon human beings; and these diseases cannot, or cannot with certainty, be produced by inoculation in the lower animals. If, however, we choose the most refractory organism, pathogenic to animals, that we can find, and ascertain how it may be killed, we shall be tolerably safe in assuming that the same means will kill the contagia of the infectious diseases of mankind, with which as sanitarians we have to do. Now certain of the pathogenic micro-organisms, bacilli, have the property of forming spores, and these spores are found to be more resistent than the fully developed organism, just as a grain of wheat will survive treatment, such as drying and dipping in poisonous solutions, which would kill a growing wheat plant. Of the pathogenic microbes, the most convenient for the purpose of testing disinfecting agents is the bacillus anthracis; it forms, under certain circumstances, spores which are exceedingly tenacious of life; it can be cultivated, and is easily recognised both by its microscopic characters and its appearance when growing; and, if inoculated into animals, it produces in them with certainty the disease known as anthrax. None of the ordinary infectious diseases of mankind are known to be caused by spore-bearing microbes (though it is possible that small-pox, the contagium of which is very tenacious of life, may turn out to be so); and so far as our present knowledge and experience goes, we may assume that means which will destroy the spores of the bacillus anthracis may be relied on as efficacious for our purpose, though it does not follow that agents which do not destroy the bacillus anthracis are, therefore, useless against the less resisting contagia of other diseases.

An extensive and important series of researches upon the efficacy of disinfectants conducted by Koch and his coadjutors for the German Imperial Board of Health is in large part the foundation of our modern knowledge on the subject, though his results have been confirmed and extended by other workers, as Dr. Klein in this country, and a committee of the American Medical Association in the United States. Koch employed both spore-bearing and non-spore-bearing organisms of several kinds. Threads steeped in cultures of these were exposed to the action of disinfectants, and tested by cultivation or by inoculation on animals. The general result of the experiments with chemical agents was to show the comparative or entire inertness as germicides of many of the substances commonly considered disinfectants. Carbolic acid was found to have a powerful restraining effect upon the growth of bacteria, but was much less efficacious in destroying their vitality. To kill spore-bearing forms it was necessary to steep them for one or two days in a 5 per cent. watery solution; a 2 per cent. solution only killed them at the end of a week; while a 1 per cent. solution did not kill them in fifteen days. Solutions of carbolic acid in alcohol or oil had not the smallest disinfecting effect; 5 per cent. solutions did not kill spore-bearing bacilli however long they were exposed to their action. Vapour of carbolic acid at ordinary temperatures had no destructive effect on spore-bearing bacilli, though some effect was produced at elevated temperatures. In other cases also it was found that the disinfecting effect of substances in the form of vapour was increased by elevation of temperature; thus spores of bacilli in garden earth were killed in two hours by exposure at a temperature of 176° F. to the vapour of bisulphide of carbon, although neither a temperature of 176° in dry air or the vapour of bisulphide of carbon in equal concentration at ordinary temperatures had any destructive action at all on them.

Sulphurous acid gas was found efficacious for the destruction of non-spore-bearing organisms. Exposure to 1 part in 100 of air killed micrococci, if dry, in twenty minutes; if moist, in one minute. Spore-bearing forms, however, were not killed, even after four days' exposure to 6 per cent. gaseous mixture of sulphurous acid in air. Chloride of zinc had no disinfecting effect; spores of

anthrax bacillus which had remained for a month in a 5 per cent. solution were in no way affected. Absolute alcohol, glycerine, chloroform, sulphates of copper, zinc, alumina, and iron (5 per cent. watery solutions), boracic acid (5 per cent.) were not found to have any destructive effect on spores of bacillus anthracis. These spores were, however, destroyed by exposure for one day to the action in watery solution of either of the following substances, namely, chlorine, bromine (2 per cent.), iodine, corrosive sublimate (1 per cent.), permanganate of potash (5 per cent.), and osmic acid (1 per cent.). They were also destroyed after longer periods by the following substances, namely, ether, oil of turpentine, hydrochloric acid, chloride of iron (5 per cent.), arsenious acid (1 per cent.), chloride of lime (5 per cent.), and quinine (1 per cent.).

Experimenting with heat in the dry form, Koch found that bacteria free from spores could not withstand an exposure of an hour and a half to a temperature of a little over 212° F. in hot air, but that spores of bacilli were only destroyed by remaining three hours in hot air at 284°. He also found that in hot air the temperature penetrated so slowly that, after three or four hours' heating to 284°, articles such as small bundles of clothes and pillows were not disinfected, and that by heat of this degree and duration most textile materials were more or less injured. The results with steam were strikingly superior. It was found that an exposure of five minutes to steam at 212° was sufficient to kill the spores of the bacillus anthracis, and that the penetration of the heat into articles exposed to steam took place far more rapidly than into the same articles exposed to hot air

A series of experiments made by Dr. Klein and myself on disinfection by heat confirm, on the whole, the results of Koch. The materials experimented with were spore-bearing cultures of anthrax bacillus, anthrax blood free from spores, bacilli of swine fever, and tuberculous pus; and the results were tested by inoculation on animals. Our results were more favourable to the efficacy of dry heat than those of Koch. We found that spores of bacillus anthracis were killed by exposure for four hours to a temperature between 212° and 216° F., or for one hour to 245°. Non-spore-bearing bacilli were rendered inert by one hour's exposure to 212° to 218°. Anthrax spores were killed by boiling for one minute in water, or by exposure for more than five minutes to steam at 212°. We also found steam heat to penetrate far more rapidly than dry heat. Similar results have been obtained by other observers, so that the superiority of steam over hot air as a disinfectant may be looked upon as thoroughly established. With a view to ascertain whether the advantages of steam could be obtained while avoiding certain inconveniences in its use, we made some experiments with hot moist air, but the result was that, while the moistening of the air aided the penetration of heat, it did not up to the point of one-third saturation render it more effectual in killing bacilli than dry air.

Burning, of course, is a very thorough means of disinfection.

It is characteristic of the class of infectious diseases that the morbid poison which produces disease multiplies in the body of the patient, and is given off again from it, and that it continues thus to propagate itself for a considerable period—often for several weeks. The poison is believed to be especially given off from the part of the body upon which its local effects are manifested, as from the skin in small-pox; the skin and throat, and perhaps the kidneys, in scarlet fever; in discharges from the throat and nostrils in diphtheria, and from the bowels in enteric fever and cholera. There is reason to think, also, that the contagia of some at least of these diseases can multiply in suitable media outside the body, as in milk, sewage, soiled linen, or moist sewage-contaminated soil; perhaps, also, even in potable water. On the other hand, some of the pathogenic organisms are found to perish as putrefaction advances, either through the formation by them of chemical compounds antagonistic to their own life, or through the competition of the ordinary putrefactive forms, just as in a neglected garden the exotic flowers are choked or stifled by the rank growth of the indigenous weeds.

Contagia are not as a rule permanently destroyed by cold, though that of yellow fever is so. They also, in general, are able to survive drying, though Koch states that drying is fatal to the comma bacillus which he finds in Asiatic cholera.

The matters which may act as carriers of infection, and may thus require disinfection, are:—1. The body of the patient, living or dead. 2. The discharges given off from the body of the patient, and more particularly those from the organs specially affected by the disease, that is, the exfoliating scarf skin in small-pox and scarlet fever; the discharges from the throat and nostrils in scarlet fever and diphtheria and those from the bowels in enteric fever and cholera. 3. The air tainted by exhalations from the sick; the poison probably existing therein in the form of suspended particles. 4. The clothes, bedding, and other articles used by the sick. 5. Articles of food, as milk and water. 6. Walls, floors, &c., of dwellings occupied by the sick, especially dust and dirt lodging upon the walls, and dirt accumulating in the cracks of the floor. 7. Collections of filth, as sewage, especially in a stagnant state, or deposited in or encrusting the sides of foul drains; foul ground surfaces and subsoil.

The processes of disinfection applicable to the living body, that is, baths, inunctions, lotions, and dressings, come within the province of curative medicine and surgery rather than in that of public health.

For the prevention of the spread of infection from the corpses of persons who have died of infectious diseases the means usually employed are enclosure in a more or less air-tight coffin with chloride of lime or charcoal, and early burial, and I do not think that anything more is necessary. I have never found any reason to think that a body lying undisturbed surrounded by plenty of earth of a suitable nature is a danger to the public health. The advocates of cremation refer to the observations of Pasteur that cattle grazing in a field in which the bodies of others that have died of anthrax have been buried have contracted the disease; and that the spores of the bacillus anthracis are found in the superficial mould over the graves being brought to the surface by earth worms; but, as I have mentioned, the spores of the anthrax bacillus are exceptionally tenacious of life.

It is not of much use attempting to disinfect the infected air of sick rooms by chemical means, for active chemicals, if present in sufficient quantity to be effective as disinfectants, would render the air irrespirable. It is easier to get rid of it, and let its place be taken by fresh air. The contagia of most infectious diseases appear to be destroyed when freely diluted with fresh air. The poison of typhus fever is notably so, but that of small-pox does not appear to be, as Mr. Power has shown that small-pox may be disseminated through the air for considerable distances around a hospital in which many cases of that disease are under treatment. To avoid this it has been proposed that instead of ventilating small-pox wards into the open air, the air from them should be extracted through a flue and burnt in a furnace; or I might suggest that a steam blast might be used to extract the air and disinfect it at the same time. A recent invention for ventilating sewers uses a circle of gas burners for creating an up current of air, and passes the extracted air through the flames with a view to disinfect it. The offensive, and possibly infected, vapours from refuse destructors and the caldrons used in bone boiling and similar trades are best destroyed by passing them through a furnace. For the disinfection of the discharges of the sick chemical agents must, as a rule, be used, though the discharges from the throat and nostrils in diphtheria and scarlatina may be received upon pieces of rag and burnt. It is of prime importance that infectious discharges should be disinfected immediately on being passed from the body, both because delay will give

them more opportunity of causing mischief, and also because if the infected matter be mixed with a large quantity of other organic matters, as in a drain or privy, before the disinfectant is applied, the action of the latter will have to be exerted on a greater mass of material, and its effect will be *pro tanto* weakened; and the chances will also be great that portions of the infective material will escape its action. It is thought by some that germs of enteric fever, for instance, may long lurk unsuspected in defective drains and privies until some accidental circumstance, such as disturbance of the contents, brings them into activity, so that many of the "sporadic" cases of this disease thus arise.

Of chemical disinfectants for the disinfection of excreta, corrosive sublimate is probably the most trustworthy and suitable for ordinary use. In its use, however, three precautions have to be borne in mind—1. It is very poisonous, and hence, in order to avoid accidents (such as frequently occur with carbolic acid), the solution should be coloured, as with permanganate of potash, sulphate of copper, or aniline blue. 2. It corrodes iron and other common metals, and is instantly decomposed by contact with them, hence it must be used in non-metallic vessels. 3. It forms, with albumen, an inert insoluble compound, but this may be prevented by acidulating the solution. A solution suitable for disinfection of excreta, clothing, &c., is made by dissolving half an ounce of corrosive sublimate, with one ounce of hydrochloric acid and five grains of aniline blue in three gallons of water.

Chloride of lime is a useful disinfectant for excreta, but too strong a solution injures clothing Carbolic acid is especially an antiseptic, retarding putrefaction, for example, in sewage, but a 5 per cent. solution is recommended by Koch by preference for disinfecting excreta and soiled linen of cholera patients. Permanganate of potash is an excellent deodorant, and has the advantage of not being poisonous. It is also, to some extent, a true disinfectant, but its action upon infective matter is much weakened when this is mixed with a quantity of other organic matter. Green copperas (ferrous sulphate) is a cheap deodorant, but, according to Koch, is not a disinfectant proper. Its habitual use for flushing sewers in time of cholera was strongly recommended by Dr. Budd, and was said at Bristol to have produced excellent results.

With regard to the disinfection of clothing, bedding, &c., used by the sick, it may, in the first place, be pointed out that for such articles as will stand it boiling in water for, say, five minutes is an effectual means of disinfection. And, since the infectious matters are not actually incorporated with the fibres of the fabric, but merely attached as dirt to their outside, there is reason to think that even a thorough ordinary washing will be a sufficient disinfection, so far as the articles themselves are concerned; but the infectious properties are transferred to the water in which they have been washed. The dangerous properties of such water are shown by the frequency with which cholera is contracted by those who wash the linen of cholera patients, and by cases like that at Moseley, recorded by Dr. Ballard, where an outbreak of enteric fever occurred among the persons drinking the water of a well into which had percolated the soapsuds in which the soiled linen of an enteric fever patient had been washed. To avoid such risks it is necessary that infected articles which are washable should be disinfected before being washed; this should, for obvious reasons, be done immediately on their being left off. Boiling might be used for this purpose; but boiling water in sufficient quantity is not always at hand; and again, if soiled clothes are boiled, coagulation of albuminous matters fixes the stains in them and spoils their colour. Hence it is more convenient to put the clothes to steep in some chemical disinfecting solution, as that of corrosive sublimate already mentioned, of which a panful should be kept in readiness. A solution of corrosive sublimate is the best for this purpose, as, besides being the most effective, it has the advantage that it does not stain or rot the linen. When the grosser dirt has been removed by rinsing in water, the articles may be boiled.

Articles which cannot be boiled in water without injury, such as cloth clothes, blankets, and beds, are best disinfected by exposure to heat, and the experiments which I have quoted show that for this purpose a steam heat is preferable to a dry heat for several reasons, especially because a lower temperature and a shorter exposure suffice to kill infective organisms, and because a steam heat penetrates much more rapidly than a dry heat into bulky and badly conducting articles. Further advantages are that in a steam apparatus the temperature is approximately equal in all parts, that in can be accurately ascertained, and kept constant at any required degree for any length of time—conditions which are essential to a good apparatus, but which are very difficult to obtain where dry heat is employed. Of dry heat apparatus known to me, Dr. Ransom's self-regulating gas disinfecting stove is the only one in which these conditions are successfully complied with. In several kinds of disinfecting oven frequently used there was a wide difference, sometimes as much as 100° F., between the temperatures in different parts of the heated chamber, and the thermometer used to indicate the temperature did not do so by a wide interval, again sometimes by as much as 100°. Also in ovens heated by coal or coke it is difficult to regulate the temperature so as to keep it near the required point. The result of such defects is apt to be either that clothes are scorched and spoiled, or that, on the other hand, with a view to avoid this, they are so insufficiently heated as not to be thoroughly disinfected.

With care, and in a suitable apparatus, most articles can be submitted to either dry or steam heat without serious injury, but leather is instantly destroyed by steam. Books, in these days of free libraries, sometimes want to be disinfected; it may be done by exposing them to dry heat, the covers being held back so as to open out the leaves and allow the heat to penetrate. Steam is inadmissible, as it would soften the glue and destroy the leather. Letters may be disinfected by heat, but the effect upon sealing-wax and of steam in loosening the gum of envelopes must be remembered.

A process suitable for the disinfection of rags at paper and shoddy mills is a great desideratum, the requisites being that it shall be cheap, rapid, and effectual, and applicable to rags in the bale without unpacking. An American process attempted to do this by forcing steam into the bale through hollow screws; but it was found that the heat was not uniformly distributed. The infection from which rag-workers incur most danger is that of small-pox, the contagium of which is the most persistent of any of the common infectious diseases, though I could quote cases which show that the contagia of scarlet fever and diphtheria may retain their activity a long time in articles that are kept shut up and not exposed to the air. Outbreaks of small-pox occur from time to time among workers both in linen and cotton and in woollen rags, but are most frequent at paper mills where the best writing-paper is made, the reason being that such paper is made from white linen rags, the remains of articles that come into close contact with human bodies. Unfortunately there are no means of recognizing infected rags except by their effects, which are not manifested until too late for preventive measures to be of any use. It is not practicable to insist on the disinfection of all rags, and it is not possible to say which rags ought to be disinfected and which it is not necessary to disinfect. Fortunately, against small-pox—the only disease from which rag-workers incur risk—they have in re-vaccination an effectual protection.

As regards disinfection of food, no one would, I presume, willingly eat or drink articles that he knew to be infected. As, however, one cannot always guarantee the absence of infection in the viands we eat or the water or milk that we drink, it is satisfactory to know that boiling or thorough cooking may be trusted to

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secure complete disinfection. In the experiments I have quoted it was found that even the very refractory spore-bearing bacilli of anthrax were destroyed by one minute's boiling in water at 212° F., though certain non-pathogenic bacilli found in vegetables and milk require for sterilisation a higher temperature or more prolonged boiling, a fact familiar to the housekeeper who makes jam. It is doubtless owing to the efficiency of cooking as a disinfectant that sanitarians in France and Germany, where milk is, I believe, always boiled before use, are sceptical as to the possibility of the propagation of infectious disease by that medium; whereas with us in England, where milk is drunk raw, epidemics of milk origin are a matter of almost everyday experience. On the other hand, trichinosis so common among the Germans, who eat their ham raw, that it has to be guarded against by an elaborate system of microscopic examination of all slaughtered swine, is practically unknown as a human disease in England and France, where meat is always cooked.

The case of the Welbeck outbreak in 1880, investigated by the president of our section, in which a number of persons were seized with an acute specific diarrhœa after eating cooked ham at an auction, may at first sight appear to disprove the efficacy of cooking, as the disease was proved to be caused by a spore-bearing bacillus which was present both in the raw ham and in that which had been cooked. The explanation, however, is probably that the cooking had not been sufficient, of which there was evidence; but that the cooking had not been without effect was shown by the fact that experiments made by feeding animals with portions of raw ham were more uniformly successful than those with the cooked ham. It is to be borne in mind that any bacteria left undestroyed would in time reinfect the whole material, and also that a chemical poison produced by the bacteria would not necessarily be destroyed by a degree of heat sufficient to kill the bacteria themselves. A series of cases of "pork-pie poisoning" at Retford, investigated by Mr. Spear in 1887, which presented similar features to the Welbeck outbreak, was found to be caused by a bacillus developing in the pies after cooking. It was found by Dr. Klein that exposure for one minute to a temperature of 153·5° was sufficient to kill the bacillus; but exposure for twenty minutes to a temperature falling from 143·6° to 136·4° did not do so.

For house disinfection, fumigation with sulphurous acid or chlorine gas, the latter preferred, followed by thorough cleansing and scrubbing, removal of wall-paper and lime-washing, are to be recommended; but these processes, to be effectual, need to be carried out with more thoroughness than is often done. A difficulty often met with is to know where the inmates are to go while the house is being disinfected; and it would be useful for this and other purposes if sanitary authorities had power to provide refuges for people whom, although not themselves sick, it might be desirable to remove from their homes. Here, however, we come to the question of isolation, which, as I have already occupied your time too long, I will leave to other speakers.

II.—By P. Caldwell Smith, M.A., M.D., D.P.H.Camb., Lecturer on Hygiene, Western Medical School, Glasgow.

Disinfection and isolation, to be of any use at all, must be thorough and complete. It is my experience, and I am certain that it is yours also, that in the great majority of cases of zymotic disease, the former has been carried out very inefficiently, while the latter was very frequently not carried out at all. Until disinfection and isolation are carried out with the utmost thoroughness, we cannot hope ever to reach that millennium of preventive medicine, when zymotic disease shall have ceased to exist.

This subject naturally falls into two divisions: 1. Disinfection and isolation in hospitals. 2. Disinfection and isolation at home.

In regard to isolation in hospitals, I would lay down the following rules: 1. That in a large town the different zymotic diseases should be treated in separate pavilions; no communication should exist between wards containing cases of different zymotic disease. 2. That in the case of the larger towns the pavilion for small-pox should be situated at a distance from the other pavilions, and were it not for the difficulties of administration, I would suggest that the pavilion should be situated say two or three miles from the nearest occupied dwelling, and that it should be surrounded by a belt of trees, such but not sufficiently near to interfere with the free circulation of air round the hospital. 3. That in the larger towns a separate resident medical officer should be appointed to this hospital, whose duty would consist solely in attending on cases of disease in the hospital. 4. That in the case of the smaller towns and the rural districts, provision should be made by means of cottage hospitals, such hospitals containing wards for scarlet and typhoid fevers and diphtheria only. Arrangements, however, should be made for the immediate erection of a small-pox hut as soon as a case of small-pox appears in the district.

1. With regard to disinfection in hospitals. All hospitals should, as a *sine quâ non*, contain a steam disinfecting apparatus; such apparatus being, in the case of the large towns, fixed, and in the case of the smaller towns and rural districts, it may be movable. Many patterns of the latter are now made, and the majority of them are thoroughly efficient. In the next place a well-appointed laundry should be provided at a distance from the hospital. No communication should necessarily be allowed between those handling the infected and those handling the disinfected articles. I have known of several cases of scarlet fever and small-pox arise in washerwomen in this way. All clothing which might be injured by steam should be soaked in a solution of corrosive sublimate before washing. I may say that this has not long since been introduced into the Belvedere Fever Hospital, Glasgow. The clothing which the patient wore on his arrival had better be destroyed *in toto*, and more especially if the patient belong to the poorer classes. It should, however, be done in all classes of small-pox and probably typhus. The wards of the hospital should be vacated *seriatim* once a year for thorough cleansing, whitewashing, and ventilation, and a fortnight or three weeks should elapse before patients are put into the ward again.

2. *Disinfection and Isolation at Home.*—Isolation at home is at all times a difficult matter. Among the poor it is absolutely impossible, and in cases of small-pox and typhus in all cases it should not be attempted. In cases, however, of scarlet fever, measles, diphtheria, and typhoid fever and among the well-to-do it may often be carried out in a fairly satisfactory manner. The room should be at the top of the house, of course; no furniture but the bed, and perhaps a mat for the feet, which could afterwards be burned. Plain tables and chairs are all the furniture required, with a table on the landing outside.

There should—and this is more important in scarlet fever than in typhoid—be no communication between the nurse and any occupant of the house. It is, however, only in a few houses that absolute isolation can be got, and my own opinion is that all cases of epidemic disease should at once be removed to a hospital. It always lessens the chance of the case becoming a possible centre of infection.

With regard to home disinfection, we have yet much to teach the public, and I am afraid the profession also. After the elaborate labours of Koch and others, we recognize that the germs of the infective diseases are difficult to destroy, and to deal with the question as has been done in the past is worse than useless.

Aerial disinfection is a sorry stick to lean on, and the sooner it is done away with the better, until at any rate our ideal disinfectant is discovered. As an old practitioner shrewdly said, "the only value he found in disin-

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fection as ordinarily carried out was that it created such a smell that people had to open their windows and so get good ventilation."

Micro-organisms, being presumably palpable entities, have a tendency to fall and lodge on the objects in a room. This being the case, it follows that, comparatively speaking, the number of micro-organisms in the air will be small in comparison with those on the floor, walls, blankets, bed, &c., and consequently our first aim should be to thoroughly disinfect these. After the patient is convalescent, the floor, walls, ceiling, and the other solid articles in the room should be washed thoroughly with a disinfectant solution, the paper, if any, being removed and burned, and the ceiling whitewashed. The bed, blankets, and personal articles of clothing should be disinfected in a steam disinfecting appartus, and then washed. The room should then be thoroughly ventilated for a week before being occupied; and in my experience, which is now very large, these measures have always been sufficient to prevent the spread of the contagion.

Within the last five years I have attended over 1,500 cases of epidemic disease, and I have never been unsuccessful in preventing the spread of the disease from the patient after my attendance began, and as soon as my instructions were thoroughly carried out.

A few words about disinfectants. I do not include under this deodorisers, but only true antiseptic substances or substances destructive to the life of micro-organisms. Many of those which were in common use have, since the publication of Koch's paper, been given up. Carbolic acid has, notwithstanding, held its ground, more especially as an antiseptic in surgery. There are two disinfectants which have lately come into more extended use—namely, corrosive sublimate and creolin, and with both of these I have had very large experience. Corrosive sublimate, as you are aware, has two disadvantages; in the first place, it is very poisonous, and, in the second, when added to fluids containing organic matter, an insoluble albuminate is formed, which is inert. The first objection can be got over by using great care and by colouring the solution, but the second is not so easily remedied. Besides acidifying with some acid which is said to prevent this action, Dr. Tracey, of New York, advises the inserting into the fluid a piece of copper foil, and adding corrosive sublimate solution till all the albuminate is precipitated; then continue adding till a deposit is formed on the foil, which occurs whenever the solution contains the perchloride in the proportion of 1 to 5,000. Of the second, creolin, much has been said of late, more especially in Germany. It is, in my experience, the ideal deodorant, and as a true disinfectant I can speak of it in very high terms. I have not experimented with it in a laboratory, but from the results obtained in Germany we must accord it a high place among disinfectants. It has this great advantage, that it is not poisonous, and also that owing to its powerful though not disagreeable odour, it cannot be mistaken for anything else. A third substance, hydronaphthol, lately experimented on by Dr. Edington, of Edinburgh, and spoken of very highly by him, seems also to be a true disinfectant and a non-poisonous one. Of this substance, however, I have had no practical experience.

III.—By William Squire, M.D., F.R.C.P.

Within the last twenty years only, or since the last meeting of this Association at Leeds, have we had such means of isolating the sick in the more common epidemics as to enable a judgment to be formed of the success obtained, and of the parts due to each of various sanitary measures in producing it. The good effects of better drainage and purer water had been established, not only in the prevention of enteric fever, but in the diminution of phthisical disease, and some sanitarians were hopeful that epidemics of the more obviously infective fevers would be abated. This hope soon proved fallacious; even infections such as relapsing fever and typhus, thought to be the associates of filth and famine, reappeared in England very shortly, and in London a hospital for the isolation of relapsing fever was, in 1870, opened at Hampstead; more than 200 cases were received, and the disease rapidly disappeared from amongst us. In this same year, 1870, small-pox, spread by the Franco-German war, raised the fatality of this disease in London to 973, and in 1871 to 7,912, from what was then thought the low figure of 275 in 1869; only once, in 1857, had it been below 200. This sudden increase of small-pox occurred at the end of 1870, and from that time dates the permanent provision made by the Metropolitan Asylums Board for the isolation of infectious fevers; in two months 582 cases of small-pox were received into the Board's hospitals, and during the next twelve months 13,145 were thus isolated; even then not half the fatal cases had been patients in these hospitals, but next year only one in nine of all the deaths from small-pox in London occurred out of the Asylums Boards hospitals. At length the means of isolation were adequate to the proportion of the epidemic, and the mortality from small-pox was reduced to 57 and to 46 for the two years 1874–75, or one-fifth of any previous minimum. This was before the ships were utilised as small-pox hospitals, and the reduction was not for one year only as heretofore. Typhus, in the same way, after 1,071 cases had been isolated by these hospitals, was reduced in 1875 to 65 cases, in 1880 to 28 cases, in 1886 to 10 cases, and last year to 1 only, though twice in those ten years a tendency to increase had been observed. In those instances, and in those from enteric and scarlet fevers to be noticed, isolation is not the only factor concerned. Disinfection has a large share in the control over the spread of those epidemics. The disinfection of premises, rooms, and clothes, which follows upon the removal of the sick, often prevents other cases arising from the same source, while the removal of the patient for the whole period of infection is a more efficient safeguard against its spread than any amount of soap and water or external disinfectant could possibly be. It may here be observed that the provision of means of isolation by sanitary authorities and securing facilities for all classes to avail themselves of such means is equal to, and often more than equal to, any scheme for the registration of infectious illness, or for the notifying the outbreak of infectious disease in large communities. Both means should be in force, but it is useless to give notice of the presence of infection unless means of isolation are provided and insisted on; no method of disinfection will succeed unless those who have been exposed to infection are kept from mixing with others, at school or elsewhere, until they are known to have escaped it, and those who have been attacked are kept from mixing with the susceptible until the infectious period is over. The public establishment of good wards, good nursing, and special care attract the notice of those in need; the experience of the last London epidemic of scarlet fever shows how readily the people will notify any illness to the central authority when aid is at hand. The only difficulty, then, is to settle the terms on which admission to the wards is to be granted, and to regulate the mode or degree of payment. Scarlet fever, against which we have no vaccinal defence, is specially in need of extended means of isolation; yet, until five years ago, before Miss Mary Wardell's home, we had no convalescent place for scarlet fever patients, and the fever hospital at Islington could take but few of the numerous acute cases always occurring around us. The Asylums Board hospitals took in a gradually increasing number, but under many restrictions, and it was not until the epidemic of 1887 that more adequate provision was made. In the last quarter of 1887 close upon 3,000 cases of scarlet fever were treated in these hospitals, with a mortality of 267, or more than two-thirds of all the deaths in London from the epidemic in this the highest period of its activity. In this year 5,900 cases were treated in these hospitals, and 4,408 last year, all the convalescents being detained during the infectious period. Diphtheria is now dealt

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with in the same way. Consequently, in this 1887 epidemic, scarlet fever in London was less fatal than in many non-epidemic years, and so completely was it arrested, that for the first time since registration began no autumnal increase of it occurred with us at the end of last year. As every three or four years brings a new population of children at the most susceptible age around us, our means of isolation should be maintained. Chief among these is a convalescent place such as at Winchmore Hill: here 3,041 scarlet fever convalescents were under care last year (1888), with 22 deaths, most of them from other infections, namely, 4 from measles, 2 from whooping-cough, and 14 from diphtheria. Reinfection from scarlet fever only occurred in three cases, and all recovered.

IV.—By E. W. Hope, M.D., Assistant Medical Officer of Health, Liverpool City and Port: Lecturer on Public Health, University College, Liverpool.

In sanitary measures, as in everything else, it is a matter of no small moment to possess definite and conclusive evidence in support of the recommendations we make or of the views we hold, and in order to insure this it is necessary to record as accurately as possible the results which have followed the measures adopted. In regard to the two points set down for discussion, we frequently find that they are difficult of application from the fact that the channels and conditions of communication of infectious diseases are so numerous and so various as to lead to a perfunctory and slipshod use of available preventive measures: as a result, the value of isolation and disinfection is often underrated by the profession and not appreciated by the public. It cannot be too distinctly understood that unless the disinfection is thorough or the isolation complete no satisfactory results can be looked for, but when carried out with efficiency and common sense they furnish two of the most important factors which can be employed in the control of epidemic disease.

In a statement as brief as the circumstances will allow, I propose to submit a typical series of instances in which the neglect or careless performance of disinfection and isolation have been followed by disastrous results, and, by way of contrast with these, I submit a corresponding series in which the efficient application of these measures has entirely checked the spread of disease. All of these cases, I may add, have come under my own personal notice

The first series consists of instances of the occurrence of a case of typhus fever in dwellings of the class with which it is usually associated in which the farce of "domestic isolation" was gone through, the nursing being performed by the relatives. Eighty separate and distinct cases of this nature are on the list before you, and in each case the disease spread through the family, as shown, attacking a total of 386 individuals of these families, of whom 62 died. As a contrast to this, I show you a table of an equal number of instances in which the first case was removed and isolated in hospital before the seventh day of illness, and disinfection and cleansing of the house and its contents performed, and in which no extension whatever of the disease occurred. These are incidents of half a dozen years ago, but they are worth remembering, as an argument, were one ever to be necessary, against the folly of attempting domestic isolation of typhus fever.

Turning to small-pox, the evidence in favour of the value of isolation and disinfection is, if possible, even more forcible. First, take the example of domestic isolation, or, rather, failure to isolate:

A girl, aged 19, contracted small-pox at her place of business; she went home to 94, Upper Beau Street, where, after an illness of twelve days, she died. The death was notified by the registrar. Within the next ten or eleven days after her death about forty cases of small-pox were found in the immediate neighbourhood of this house, and were removed to hospital; the stage of the illness of each of these cases proved conclusively that they had been infected during the latter part of the time that the poor girl lay ill at No. 94; their locality served to identify still further the source of their infection; thus, passing down the street, No. 92 (the house next to that in which the death occurred) produced two cases; No. 88, one case; No. 84, one case; No. 82, one case; No. 80, one case; No. 50, one case; the house opposite, namely, No. 115, one case; as did Nos. 73, 67, 57. Passing up the street, the house adjacent to No. 94 produced one, as did No. 100; eleven cases came from the streets on either side and parallel to Upper Beau Street, and five from the two short streets running at right angles through Upper Beau Street. "Domestic isolation," however, provides other channels for the dissemination of small-pox: by the children of the family attending school where there is small-pox in the house; the adults and lodgers going to their office or their tailoring; by the wife dividing her attention between the patient and the shop; by infected linen sent to the laundry; by tradesmen and friends calling; by the patient walking in the streets as soon as this is physically possible. All of these, and others, have been under my notice, and it is upon a volume of such evidence that I submit that domestic isolation of small-pox is not to be lightly undertaken; where it succeeds in one case, it fails—and fails disastrously—in ten.

As an example of efficient isolation, I quote the case of our City Hospital, which is some 400 yards from the nearest street, and from which no spread of small-pox has occurred during the four years of its use for that disease. The same hospital also furnishes an example of the value of disinfection in dealing with small-pox—the most virulent of all forms of infection: During the three years 1885-86-87 some 1,000 cases of small-pox were treated in this institution; at the end of that time the disease disappeared from the town, and it was resolved to use the hospital for fever patients. This involved the use of the same wards, the same bedding, the same clothing and utensils and the like, recently used for small-pox, and I need hardly assure you that the details of cleaning and disinfecting were scrupulously looked to. The wards were sulphured, painted, or limewashed, and freely exposed to the air; bedding and such clothing as could not be boiled were exposed to dry heat of 230° for nine hours in the Nottingham gas apparatus: linen, &c., were boiled, and everything freely exposed to air and sunlight. For the next twelve months fever patients were treated in these wards with eminently satisfactory results, and no small-pox whatever made its appearance.

Before sitting down I would direct attention to another readily-communicable disease, in which very disastrous results have followed the too common disregard of appropriate isolation and disinfection; I mean typhoid fever—a disease whose communicability is not as fully recognized as it ought to be, or guarded against as the gravity demands. A few instances make my case clear:—

1. Hugh K., aged 20, had a severe attack of typhoid fever, lasting eight weeks; excessive diarrhœa and much delirium were prominent symptoms about the third and fourth weeks. Hugh had a brother, aged 14, and a sister, aged 10, who were sent from home at the commencement of Hugh's illness, and continued to attend office and school respectively. At the end of the third week, however, they came home regularly to dinner, and about this time Hugh's motions were, the mother states, sickeningly offensive. The mother, besides nursing Hugh, had also to prepare the meals for the other two. These meals were taken in the sick room, as the mother could not leave Hugh, owing to his delirium. Less than two weeks from the commencement of this arrangement both of these younger ones developed typhoid.

2. C., a young man, came home from sea, and was found to be suffering from typhoid. During his illness, which was moderately severe, his three brothers shared his bed-room, on the assurance that the disease was not

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catching. After the third week they all three developed typhoid.

3. H., Victoria Square (new model dwellings), a boy, aged 14, contracted typhoid, presumably at his place of business, where there was certainly enough to explain it, and lay ill for three weeks at home, nursed by his mother and sister. At the end of that time, both of them simultaneously developed typhoid.

I could easily multiply such cases, or quote the records from some of our hospitals, more especially our fever hospitals, where nurses attending cases of typhoid have themselves contracted the disease, but such instances must be familiar to every one.

V.—By C. H. ALLFREY, M.D., F.R.C.S., P.H.D.Camb.

The writer gave an account of an outbreak of scarlatina, which occurred while he was acting as resident physician at the Grand Hotel Grasse. He thought that useful lessons might be drawn from his experience.

There were in all six mild cases—five decided, one doubtful. The outbreak commenced, as was correctly stated in several English newspapers, in the family of an English nobleman; but there was otherwise nothing to justify the statement made in the same paragraphs to the effect that other members of the family were suffering from "blood-poisoning," attributable to insanitary conditions.

The first case occurred in the person of M., aged 6, who was attacked on January 22. He was promptly removed to a neighbouring villa, and placed under the charge of an experienced nurse. All communication was cut off between him and the rest of the family, who consented to a sixteen days' quarantine in the apartments they occupied in the hotel.

The visitors in the hotel were informed of the occurrence of a case of scarlatina, but as they were assured that all precautions were being taken, there was in this instance no panic, and no one left the hotel in consequence. The rooms M. had occupied were disinfected by sulphur fumigation.

On March 3, forty days after her son had sickened, M.'s mother was attacked by a rigor and sore throat, and on March 7 she developed a well-marked scarlatina rash. As she had been confined to her room for several weeks in a highly heated and steam-charged atmosphere, suffering from laryngeal symptoms, it was decided, after consultation with Dr. Bright, of Cannes, that it was not practicable to remove her from the hotel in the then inclement weather. Two other cases occurred on March 8—that of T., one of the visitors, and that of the dessert maid of the house, who also acted as deputy housekeeper. These cases were at once removed to the same portion of the hotel in which M.'s mother was being treated—the ground floor of the west wing. The rooms were boarded off from the rest of the hotel, and a perfect quarantine was established. An efficient staff of English nurses was engaged, and every precaution taken to guard against infection. These measures were apparently successful, as the only case occurring after this was that of Miss V. S., who, although after the unusual long incubation period of fourteen days, must have taken the infection from her sister.

All the cases were subsequently removed from the hotel, but, in the meanwhile, as the result of the exaggerated reports which had been circulated in England and on the Riviera, and no doubt from the knowledge that the cases, however isolated, remained under the same roof, there was an unreasoning panic, and the hotel was emptied.

The writer's conclusions were—that the introduction of the disease was, in the first instance, accidental, there being no history of the occurrence of scarlatina in the hotel at any previous period of its existence, whilst there was evidence of its existence in the town and in the near neighbourhood of the hotel. The sanitary arrangements of the hotel were examined by the writer in January, and again at a later period in company with Messrs. Best & Son (consulting engineers to the town of Oxford and to the London School Board), who happened to be at Grasse, preparing a scheme of drainage for the town. It was found that not only had the system of drainage been carried out by an English builder, and well constructed on approved principles, but, that it was in good working order. The only material defect revealed in the course of the exhaustive examination was the filthy state of the cow stables in the dairy from which the milk supply of the hotel was derived; but, as the diary did not belong to the hotel, and as the features of the outbreak did not point to milk or any other common article of diet as the cause, this is not material. It will, however, be satisfactory to intending visitors to Grasse to know that, profiting by past experience, the proprietors have decided to establish a dairy of their own, so as to place the milk supply above suspicion.

After giving evidence to negative other suggestions, the writer attributed the illness of M.'s mother to infection from her daughter, the doubtful case alluded to, and whom he believes to have had scarlatina in a latent form. She had been ailing more or less for several weeks, but with no symptoms to justify the diagnosis of scarlatina until the discovery on two consecutive days of distinct traces of albuminuria following on slight icteric symptoms. Miss I., who was on intimate terms with M.'s sister, and who had been frequently in her company, and also in the infected wing, probably derived her illness from the same source. The dessert maid's infection was traced to her having handled, owing to an unfortunate miscarriage of the arrangements made for the disposal of infected articles, one of M.'s blankets.

The writer, assuming the sequence of events to be as he explained, laid stress on the importance of extreme caution in giving advice as to infection from mild cases, holding that it is only safe to treat all cases, however mild and whatever their stage, as equally infectious, believing that infection depends more on the susceptibility of the patient and on the degree and circumstances of the exposure than on the severity or stage of the infecting case.

He expressed an opinion that the second outbreak would have been prevented altogether—certainly so far as the hotel was concerned—had the removal from the hotel of the whole of the infected family been insisted upon. He thinks that the importance of adopting such a course upon similar occasions should be impressed upon all hotel keepers. He advocates the formation of an association of hotel keepers to ensure the sanitary well-being of hotels, having for its principal objects (1) an agreement to insist upon the removal from their hotels (as soon as practicable and convenient with the safety of individuals) of all members of an infected family; (2) an agreement, as suggested by Dr. Burney Yeo, to require the signature of all visitors to a declaration that none of the party have been suffering from or, to their knowledge, exposed to infection within a certain period; (3) the establishment of a register, as suggested by the Messrs. Best—of a register of sanitarily certified hotels.

The writer advocated warmly the non-concealment of the occurrence of infectious cases, both as a matter of justice to the visitors and as a matter of policy to the proprietors. He believes that visitors in a hotel where the existence of infectious disease is known, and where they can see what precautions are taken, and gauge the degree of danger, are, in point of fact, safer than in chance hotels, where cases of infectious disease may be concealed.

Discussion.

Dr. HUTCHINSON (Monte Carlo and Scarborough) gave some details of the outbreak of scarlet fever at Monte Carlo and the difficulties of isolating cases arising in large hotels. He drew attention to the utter uselessness of the present means, such as fumigation, repapering, whitewashing, &c. He suggested when these infectious

cases arise in hotels, an isolation villa (or hospital, call it what you will) as the only means of safety, and he expressed a hope that the meeting would give an opinion upon the subject.

Mr. ASTON said that as he had been for five years medical superintendent of a hydropathic establishment in this country, and, in his experience, had had to deal with the development of epidemic disease in connection with that establishment, he desired to point out the urgent necessity of requiring proprietors of public establishments to show to the sanitary authorities of their districts that they were in a sound sanitary condition, and in a position to cope promptly with the development of infectious disease. The establishment in question, although in a sanitary district, was from end to end, when he went there, a sewage cesspool. Not long ago a case of infectious disease developed in a child who was visiting the establishment, and there were no provisions whatever for dealing with it, although he had urged repeatedly the necessity upon the directors for dealing with such cases. The bed upon which the child lay was, he found, taken from the bed-room and placed in a passage near which children passed on their way to school.

Dr. LITTLEJOHN (Edinburgh) referred to the importance of the subject, and said that he did not think the proposal of an isolating villa would meet the difficulty stated. Several such would require to be provided for the various forms of illness. In Edinburgh they had practically solved the question; they had a system of notification, compulsory removal, and an infectious hospital, which is provided with special accommodation for the rich and well-to-do persons who had largely availed themselves of the privilege, and thus there had arisen a certain very popular feeling with regard to hospital isolation, which is cheerfully taken advantage of by all classes. Every hotel should have a few rooms shut off from the rest of the building in which suspicious cases of illness should be received until they could be removed to hospital. Every community should be provided with such a building, which, as in Edinburgh, should contain accommodation for the rich and poor.

Mr. J. S. LOE considered that notification of infectious diseases, whether by the householder or the surgeon, was imperative, and that without it they could not stamp out infectious diseases; that it should no longer be a vexed question, but that they should have a decided opinion from the profession at large. He also believed that open drains were a great cause of infectious disease, and that the sewers should be ventilated by special shafts, and not as at present in this town, by open drains in the thoroughfares.

Dr. OGILVIE GRANT considered it of very great importance to have quarantine hospitals as well as epidemic hospitals, so that those exposed to the contagion might be watched for some time. Recently he had to cope with a serious outbreak of typhus fever. What he did was as follows:—He removed the patient affected to the fever hospital, and all the other inhabitants of the house to a quarantine hospital, where they were carefully watched. There one of the patients became affected with the fever, showing the necessity of the measures taken. Unfortunately the sanitary inspector also caught the infection in the discharge of his duties: he willingly consented to his removal to the fever house. He was glad to say that he, as well as the other patients, recovered, and the epidemic stamped out. He was satisfied that no milder measures would have been of use in preventing the spread of this epidemic.

Dr. MAJOR GREENWOOD drew attention to the practice of sprinkling carbolic powder over the openings of the gulleys and ventilation of the drains in the metropolis; he strongly condemned this as being contrary to scientific teaching, not to say common sense, and calculated to mislead the public and instil into them a feeling of false security; that he felt quite rejoiced to miss this familiar yellow and white powder from the street gulleys in Leeds, although probably the rain might have washed it all away. Next he dissented entirely from the opinion expressed by Dr. Squire, that the notification of infectious disease was useless without hospitals for removing patients to; he thought half a loaf was better than no bread, and that much more might be done to protect the public, even without removal, if a notification of infectious disease to the health authorities were generally carried out. Lastly, he wished to express a strong opinion that the Asylums Board was not the proper authority, owing to their connection with the poor-law administration, to be entrusted with the duty of removing patients suffering with infectious disease to the State hospitals; that in the metropolis there was a striking anomaly in this matter, for that while infectious disease was notified to the sanitary authority, whose officers saw to disinfection and other means used to protect the public, another authority had to be appealed to to remove the patients when necessary. Further, that the stigma of pauperism that now tended to be thrown on those who availed themselves of the assistance of the Asylums Board was a great discouragement to effectively carrying out that most important principle, the public isolation of infectious disease; that surely it was most unjust, not to say foolish, to throw opprobrium on those members of the community who, for the good of the community, are willing to leave their own homes, and go to a public hospital; the least they can claim is that they shall be put to no exposure, and that what is for the good of all should be paid for by all.

Dr. WHITELEGGE thought it was important to keep clearly in view the distinction between the possible and the impossible in regard to the suppression of epidemic diseases by isolation and disinfection. We could scarcely hope at present to stamp out such diseases as scarlet fever, measles, or whooping-cough, the periodic rise and fall of which were clearly dependent upon other conditions, as well as facilities for infection from person to person. What could be done was to reduce the prevalence of those diseases to a minimum at all times, and to delay as well as minimise outbreaks. It was doubtful if measles and whooping-cough could be efficiently isolated, as small-pox and scarlet fever demonstrably could; the former diseases occurred in more or less rhythmic outbreaks, of great intensity and comparatively short duration, so that hospital accommodation upon an immense scale would be required, and would only be in use during epidemics. The notification of such diseases could scarcely be made complete even by legislation, since the majority of non-fatal cases were probably unattended by a medical man, even if recognized at all. Touching upon the question of compulsory notification, Dr. Whitelegge said that amendment to Mr. Ritchie's Bill, advocated by the Council of the British Medical Association, had already been tried in three towns for several years, and so far, at all events, as Nottingham was concerned, the result was that, by the voluntary action of the medical profession, the procedure had been changed to a direct notification to the sanitary authority—exactly the same routine as under the much-abused dual system. In conjunction with Dr. Ashby, of Reading, he had recently tested experimentally certain of the newer forms of steam disinfection apparatus, and had found that each was capable of doing its work thoroughly, speedily, and safely. Low pressure steam, advocated originally by Koch, had now been utilized for practical disinfection, the experimental results obtained with this apparatus being most satisfactory.

Dr. A. S. UNDERHILL asked Dr. Parsons what disinfectant he would advise the medical officer of health to use in his general work? He thought that the disinfectants noted by Dr. Parsons related more to microbes and their spores, and not to rendering harmless the numberless inorganic or chemical compounds which probably are the sole causes of symptoms of disease, and which are to be found in the vegetable world as a result of proteid disintegration.

Mr. GEORGE EASTES drew attention to the fact that, in

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Paddington and adjoining parishes, cases of infectious diseases are now much less frequently encountered than they were twenty or twenty-one years ago; and this is the case with regard to both rich and poor. Twenty years ago it was difficult to isolate members of the community who had infectious diseases; people would submit to partial isolation in the upper floor of the house, but more than this could not be effected; now families gladly send away infected members to any of the hospitals provided for the purpose. Mr. Eastes narrated instances in which single members of four large families attacked with scarlatina being at once isolated; no other members of those families contracted the disease. And, to show how rapidly calls for the ambulance are attended to, he stated that he had recently sent a telegram from Paddington to the ambulance station at Chelsea, and in sixty-five minutes the ambulance, with a nurse, was at the patient's door in Paddington.

Dr. HIRST said he was medical officer of health of Prestwich, and had in his district at present an epidemic of diphtheria, which had been going on for near six months, and was only just now ceasing. The patients refused to be removed, and they had no means of isolation. Two deaths occurred in one house where there were only two rooms, one above and one below, and the dead bodies were in the living room. They had no compulsory powers. The parents refused to allow them to remove the patients. There were no means of isolation. What was wanted in such cases were compulsory powers upon which they could act immediately.

Dr. MACLAURIN said that the benefits of compulsory notification and isolation in the case of small-pox had been well shown in New South Wales, where, by a strict carrying out of this system, the colony had been kept practically free from that disease, although the population, he was sorry to say, was practically unvaccinated.

A DISCUSSION ON THE CONTAMINATION OF DRINKING WATER BY LEAD.

I.—By SINCLAIR WHITE, M.D.

I propose to discuss the more important theories that have been advanced as to the cause of the action of certain moorland waters on lead, and afterwards to review the remedies that have from time to time been suggested for this evil.

Before entering on my subject, I desire to point out that the behaviour of these waters on lead is liable to vary exceedingly under varying circumstances, and, unless great exactness be observed, the experimenter may find himself bewildered by the apparently contradictory results he obtains. Thus the size, age, and purity of the lead piping employed, the length of time the water remains in contact with the lead, the pressure of the water in the pipe, the temperature of the water, and the admixture or otherwise of air with the water, have each more or less influence in determining the amount of lead which any given water will take up.

It follows from these considerations that inferences drawn from laboratory experiments are to be accepted with great caution, unless the experiments are conducted under conditions similar to what obtain in the actual distribution of water.

1. *Deficiency of salts, especially of phosphates, carbonates, and sulphates.*—Moorland waters are singularly deficient in salts; but that this deficiency is not the cause of their action on lead is easily proved by the fact that a water which acts strongly on lead can be rendered inert in this respect by passing it through an ordinary charcoal filter. Again, it is not uncommon to find two moorland waters having almost the same amount of salts, yet differing widely in their action on lead.

2. *Presence of Sewage Matter, especially of Nitrates and Nitrites.*—These substances when present in any considerable amount have a decided action on lead, and plumbism is one of the evils that may accrue from drinking polluted water drawn through a lead pipe. Moorland waters, however, are very pure in this respect, and the ammonia they yield on distillation is almost entirely of peaty origin.

3. *Scarcity of Silica.*—A few years ago Messrs Crookes, Odling, and Tidy, after an elaborate inquiry, announced their belief that moorland waters, which act continuously on lead, do so in consequence of the smallness of the amount of silica they contain. Waters that contained upwards of half a grain of silica per gallon were found to be practically inert to lead, while waters that had a continuous solvent action on lead contained less, and often much less, than this amount of silica. These observations were confirmed by laboratory experiments in which water that acted on lead was made to lose this property by having its dissolved silica increased to at least half a grain per gallon. The water was silicated by being shaken up with finely powdered flint. Their explanation is that the silica unites with lead, and forms an insoluble lining of lead silicate. No other agent than the amount of silica present appeared to have any influence in determining the behaviour of waters to lead.

I regret I cannot assent to these conclusions. That silica has some restraining influence is, I believe, proved, but that it is the chief or only factor in the problem seems to me to be in the highest degree improbable.

The statement that waters which contain upwards of half a grain of silica per gallon do not act on lead is not invariably correct. Thus, water from the Punch Bowl, Hindhead, which contains 0·831 of a grain of silica per gallon, is said to act vigorously on lead. Again, Professor Williams, of Sheffield, has introduced definite quantities of silica, prepared by dialysis, into an acid water without diminishing its solvent action on lead.

The amount of silica which moorland water will take up from flints, even after long contact, is very small, and in practice it would seem to be exceedingly difficult, if not impossible, to silicate by means of ordinary flints some of these waters to the extent of containing half a grain per gallon. Mr. A. H. Allen has never succeeded in adding more than a quarter of a grain per gallon in this way, and Professor Percy Frankland's experience is of a similar character.

Dr. Tidy himself is a witness against the truth of his own theory. The following table shows the amount of silica he found in the various waters supplied to Sheffield.

Evidence of Dr. Tidy before a Committee of the House of Lords (Sheffield Water Bill, 1887). Samples collected June 1886. Amount of silica in grains per gallon found in various samples of the Sheffield water supply.

		Silica Grain per Gallon.
High Level System	Upper collecting reservoir ...	0·38
	Middle ,, ,, ...	0·30
	Tower ,, ,, ...	0·30
	Distributing ,, ...	0·30
Low Level System	Collecting reservoir S. ...	0·30
	,, ,, A. ...	0·16
	Distributing reservoir ...	0·25

Now it has been established beyond controversy that the "high level" water supply of Sheffield acts vigorously on lead, while the "low level" supply acts very slightly, or not at all. Dr. Tidy's table, however, shows rather more silica in the active than in inactive supply; although both are far below the amount he deems necessary for safety. But the most convincing proof against the silica theory is afforded by filtering an actively solvent water through an ordinary charcoal filter. After being thus treated, the water is found to be almost inert to lead.

4. *The Presence of a Free Acid.*—It is now well known that some moorland waters have an acid reaction, and I have been led to the conclusion that these waters owe their action on lead largely, if not altogether, to this cause. My opinion is based on the result of an inquiry I

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conducted in 1885 at the instigation of the Sheffield Corporation, supplemented by numerous observations of myself and others since then. In this inquiry I had the able assistance of Mr. A. H. Allen, of Sheffield, who did all the analytical work.

The water supplied to Sheffield is derived from moorlands which are situated from seven to ten miles distant from the town. The water from one portion of the collecting grounds (Redmires) is distributed separately, and is known as "the high level supply." The rest of the water (from Strines and Agden) is known as "the low level supply."

The "high level" water acts vigorously on lead, and has caused many cases of plumbism. It is, as distributed, appreciably acid to litmus paper, and concentration of the water increases the degree of acidity. Its acidity and power of dissolving lead increase as we leave the town and approach the collecting grounds, and both qualities attain their maximum degree in the case of water lying stagnant in pools on the surface of the peat. The greatest amount of acidity noted was equal to 0·7 of a grain of sulphuric acid per gallon of the water.

The "low level" water, as distributed, is not appreciably acid to litmus paper, even after being concentrated to one-tenth of its volume. It acts very slightly or not at all on lead. On examining it at its source, it is found that a few of the tributaries to its collecting reservoirs are acid, and that the collecting reservoirs themselves are occasionally very faintly so. In its transit to the town this water passes through a tunnel three miles long, one half of which is lined with brick laid in hydraulic cement. With the exception of this cement, neither water supply comes in contact with limestone or lime.

The "low level" collecting grounds have less peat, and are drier than those of the "high level" system. In both there are ochrey springs coming from iron pyrites, which is found in the shale and millstone grit underlying the peat. In no instance were these springs found to be acid. Besides being acid, the "high level" water differs from the "low level" in containing rather more organic matter (peat) and rather less alumina and oxide of iron.

My reasons for believing that the action of moorland waters on lead is due to the presence of a free acid are:—

First, that I have invariably found that the lead-dissolving power of these waters is in direct proportion to their acidity;

Secondly, that filtration of an active acid water through a carbon filter removes alike its acidity and power of dissolving lead;

Thirdly, that neutralization by limestone, lime, or bicarbonate of soda has a similar effect.

No one has, as far as I can ascertain, determined the nature of the acid, or, indeed, whether it is of organic or inorganic origin. The opinion which has most supporters is, that it is a mineral acid, and originally, at any rate, sulphuric acid, derived from the oxidation of iron pyrites. After a prolonged study of the subject, this view seems to me to be incompatible with the observed facts, and I believe the acid to be an organic one derived from the decaying vegetable peat.

I now turn to the second part of my subject, and the limitation of time compels me to be very brief. In seeking for remedial measures I employed an apparatus which permits of experimenting under conditions similar to what exist in an ordinary house supply.

An old and a new lead pipe, each 24 feet in length and ¾ of an inch in diameter, were attached to an iron main. By means of a series of taps and a side branch fitted with a funnel the water to be experimented on could be introduced into the lead pipes without admitting air, and kept in the pipes for any length of time without mixing with the water in the iron main, being at the same time subjected to any pressure required up to 140 pounds to the square inch.

With this apparatus I tested the solvent power of moorland water under various conditions, and before and after various modes of treatment. The following is a summary of the results I obtained:—

1. Acid moorland water invariably acts on lead, and the intensity of the action is in direct proportion to the degree of acidity.

2. New lead piping is acted on more than old lead piping.

3. The amount of lead which an acid water will dissolve goes on increasing for the first twenty-four hours, when the action usually stops; afterwards some of the dissolved lead is deposited, and at the end of six days there is considerably less lead in the water than at the end of the first day.

4. Other things being equal, the greater the pressure under which the water is stored the greater amount of lead taken up. This influence is considerable, but no amount of pressure will, of itself, render a harmless water active towards lead.

5. Other things being equal, an increase in the temperature of the water increases its lead-dissolving power.

6. The addition of a small quantity of lime-water to an actively solvent water will greatly diminish its action; but it is difficult to regulate the amount necessary to procure a maximum effect, and if too much be added it increases the solvent action of the water.

7. Contact for the space of fifteen minutes with Derbyshire limestone broken into small fragments will cause an actively solvent water to become almost inert, but after four weeks continuous use the protection thus afforded is somewhat lessened.

8. Filtration through almost any kind of charcoal will cause an actively solvent water to become almost inert to lead, and long use does not diminish this effect.

9. Almost all charcoal filters and Bischoff's spongy iron filters remove lead effectually, even when present in large amount.

Remedial measures are of three kinds:

First, those in which lead piping and lead-lined cisterns are replaced by other materials, such as wrought iron, tin, and glass-lined iron. These are most applicable in the case of new houses; and wrought iron piping might be much more utilised than it is for this purpose.

Secondly, removal of lead from the water. Nearly all forms of charcoal filters will do this most effectually.

Thirdly, treating the water before distribution so as to do away with its solvent action. This is the most desirable way of combating the evil, but it is the most difficult to carry out. Hitherto conflicting opinions as to the efficacy of this or that mode of treatment, conjoined with the expense to be entailed, have discouraged many authorities from taking action in the matter.

Liming the water, unless it is done under the constant supervision of a skilled chemist, is a hazardous procedure.

Filtration through charcoal is a very efficient remedy; but there is a growing feeling that the employment of this substance for filter-beds is undesirable, and I entirely concur in this view.

Limestone is unobjectionable, and, when fresh, an efficient antidote, but unfortunately after a few weeks' use the fragments become coated with a glitty covering of peat, which diminishes its protective influence. This untoward result can, to a large extent, be obviated by brushing the fragments occasionally.

A better but more costly arrangement would be to make filter-beds composed of an upper layer of fine sand, and a lower layer of broken limestone. The fine sand would intercept the peaty matter and greatly improve the appearance and palatability of the water, while the limestone, in consequence, would retain for a long time its protective influence.

This form of filter-bed, with the addition of flints, is recommended by the advocates of the silica theory.

Professor Percy Frankland has quite recently conducted some experiments, which show that the addition

of bicarbonate of soda to actively solvent water reduces very largely its action on lead.

II.—By T. B. Fairclough, L.R.C.P.&S.Edin., Medical Officer of Health, Kirkby Stephen District.

He had seen very great evil result to the health of individuals from drinking water contaminated with lead, and considers the question a most important one, inasmuch as it affects the whole nation. He is of opinion that much of the anæmia and physical degeneration apparent in large towns is largely due to the constant drinking of small quantities of lead, the amount of lead palsy and lead colic being by no means a true indication of the real amount of lead poisoning in any district. Soft waters are those to be avoided, yet corporations trust to surface water to fill their reservoirs, having gone to the moors for catch-ground instead of to the springs. Spring water is more wholesome for drinking purposes, but if some springs act on lead they should be avoided. The temperature of the water, too, is an important matter, as warm water takes up lead more quickly than cold. Soft waters act upon lead, and are, therefore, dangerous. Professor P. F. Frankland (Dundee) condemns all upland surface water, as not containing sufficient permanent hardness to render it inert: while Mr. Allen (Sheffield) attributes its action on lead to the presence in it of a free acid. The author does not think that anything goes on in the reservoir that makes soft water dangerous, though the water taken from the Huddersfield reservoir, which contained a free acid, dissolved lead in the proportion of 1 grain per gallon, whilst water taken from the conduit supplying the reservoir contained no free acid, and did not act on lead more than some other soft waters. [It should be noticed that the reservoir was getting low, and the authorities had just turned in more surface water than usual, and thus made the whole of it more dangerous for the time.] As to whether pipes are lead-producing or not depends, in the author's opinion, upon the condition of the water. New pipes are always dangerous, but with some waters the danger soon ceases—in two or three weeks, or even less—an insoluble crust coating the inside of the pipe. Dr. Russell (M.O.H., Glasgow) remarks that Loch Katrine water, noted for its softness, forms a glutinous film on the lead, which protects it permanently. An intermittent supply of water is bad, as any crusting or coating in the piping becomes dry and rubbed off by the entrance of the water: a fresh surface of lead is thus exposed to the action of the water, and the pipes have to go again through the same protective process as new pipes. The only reliable filter to remove lead from water is one of charcoal; even this soon becomes inert, and requires more cleaning than the ordinary householder can give it. In the case of soft waters the filtering should be done at the reservoir, and their condition made such that they may safely pass through lead pipes without contamination. The only safe water for domestic use is spring water of sufficient hardness that it will not take up lead under any circumstances. Soft water may be better for manufacturing purposes, but that should not be considered if the water is destroying the health of the inhabitants of the district supplied. One danger of drought is that it tempts the authorities to catch the surface-water too soon to turn it into the reservoir. The water should first percolate through the soil, there dissolving ingredients which give it sufficient hardness to resist the taking up of lead in solution. Another danger of drought, namely, that of the intermittent supply, has been already mentioned. Lead poisoning generally occurs more frequently in summer than in winter, and this is supposed to be due to the fact that in summer the water is warmer, and consequently acts more powerfully on lead.

Discussion.

Dr. Henry Tomkins (Leicester) argued that, although in some special districts water obtained from upland districts acted upon leaden pipes, yet this fact should not condemn the use of comparative soft water supplies; that the use of hard spring waters is attended with great drawbacks, not only for manufacturing purposes, but also for domestic use. He suggested that in towns or localities where the water is known to have a solvent power upon leaden pipes, some form of pipe (several of which are in the market) should be used which are not acted upon by the water.

Dr. Roberts (Keighley) said they had had poisoning from drinking water in Keighley. He examined all the springs and streams passing into the reservoirs, and found most of them dissolved lead. Spring water dissolved lead. Charcoal filters removed lead, and the water which had passed through the filter would not dissolve lead. This was also proved by Dr. Tidy, and Mr. Rimmington, of Bradford. Some people preferred hard water, and when the inmates of the Keighley Workhouse had a new supply, which was softer, they begged to have their tea made of the hard water. Dr. Tidy told him that a report on the health of the young soldiers in Paris who had been brought up from the country, where the water was hard, had materially suffered from the soft water. They had now, by neutralizing the acid with lime, prevented lead poisoning in those districts where the water was so treated.

Dr. A. S. Underhill called attention to the case of a clergyman in his district who declined to use the town's supply water, and preferred to use filtered rain-water which had been stored in a large iron tank. The water supply in his district was conveyed by large iron pipes with leaden domestic supply pipes. The water was rather hard, full of carbonic acid gas, with very slight traces of chlorine, and practically free from organic matter. The iron pipes did not unduly rust, and lead poisoning was unknown.

Dr. Whitelegge asked if any of those members who had spoken from practical experience of contamination of water supplies by lead had tried Barff iron as material for water-pipes. Its peculiar property of withstanding rust seemed to mark it out as specially adapted for such use, and the plan had proved most satisfactory when tried on the small scale.

Dr. Sinclair White, in reply, defended moorland water as being best for cooking and domestic purposes, and also best for manufacturing purposes. He thought, however, this should be filtered before distribution. Loch Katrine water, in its passage to Glasgow, passed through a conduit lined with old red sandstone and limestone. To this it owed its immunity to lead.

Climatology and Balneology.

Dr. Garrod asked the members to assist the Committee of the Royal Medical and Chirurgical Society formed to consider the subjects of Balneology and Climatology.

Mr. Appleton (Beverley) strongly insisted the time had arrived when some should make a stand against the practice, patronized by the fashionable doctors of the metropolis, of sending the sickened with tubercular disease into foreign lands. It was admitted by all that tubercule was incurable; therefore, they could do only two things as physicians; prolong life, and let the patients down as gently as possible. That could be arrived at as well in this country as elsewhere, which fact was enunciated by history. Sending the sick away meant extra cost, social misery, and the displacement of family love for the hireling's services. As foreign residence had failed for remedial and even alleviating purposes, why should they not begin, if the leaders would not lead, to take advantage of their uplands and fells, there to obtain at its best the best antiseptic known—oxygen?

Results of a Systematic Inquiry into the Sanitary State of the Homes of Hospital In-Patients.

By T. Churton, M.D., Physician to the Leeds General Infirmary.

The inquiry was undertaken in order to ascertain the possible share which insanitary conditions at home, and

especially defective drains, might have in the causation of diseases of medical in-patients. The author, in his paper read at Glasgow last year, had estimated that approximately one-fourth to one-third of hospital patients had grossly insanitary homes; and he then remarked upon the unwisdom and costliness of sending patients back to the bad conditions from which they came, and which had helped to make them ill. It was not practicable to investigate the homes of patients who came from the country, but only of those living in the borough of Leeds. At first the cases for investigation were selected, the addresses of those patients only being taken whose diseases or histories seemed to warrant the suspicion that something was wrong at their homes. Of these, 53 houses were examined; 28 were found defective. Cases were next taken from the medical and ophthalmic wards, without any reference to the nature of the ailments—the house of every patient living in Leeds being examined—of these there were 435; 81 houses were found to be defective. It thus appears, with respect to in-patients, that about 1 house in 5 is in a distinctly insanitary state. The defects were mainly want of traps to the sink-pipes and broken drains. Occasionally an exceptionally offensive privy—they are all more or less offensive—was the ground of complaint; sometimes a good condition within the house was counterbalanced by an offensive gully, exhaling gases from the street drains, within 4 feet of the front door. The examinations were made by the sanitary inspectors of the borough. A list of the Leeds patients was sent weekly or fortnightly to the sanitary office, and by the kind cooperation of the medical officer of health (Dr. Goldie) and the sanitary superintendent (Mr. Newhouse), the inspections were at once made, and reports furnished. Although the ophthalmic cases—many of them simply accidents, and without disease of any kind—may have increased the number of healthy houses inspected, the comparatively low ratio of defects was a pleasant surprise. Personal investigations made during eight years (ending in 1885) among patients of the Leeds Dispensary had prepared the author for a much worse result; but he had not realized to the full the efficiency of the work of the sanitary authority and the quiet reform which has been gradually taking place, house by house, from one cause or another in the borough. It would perhaps be hardly possible now to find a case such as he once saw, where a man and his wife had been for 20 years unfit for any active work, but even at the end of that time had no signs of organic disease beyond those of premature senility, and who, during all those years, had lived in a basement kitchen, the sink-pipe of which had no trap of any kind. They had admitted, but as a matter of no moment, that the sink was very offensive in rainy weather; that is to say, every other day in the year on an average. But there still remains much to be done when 20 per cent. of all the houses inspected appear to be unsound. It has been shown that the reporting of patients' addresses to the sanitary officers was a very easy matter, and their inspections could not fail to be of service to the patients and eventually to the hospital. It was hoped that the experiment, which would be continued as long as possible at Leeds, would be tried at some other hospitals also. One great advantage resulting from this inquiry has been that 109 houses (containing about 500 persons), which otherwise might have remained defective, have been put into a perfectly sanitary state.

Discussion.

Dr. LITTLEJOHN (Edinburgh) said the paper just read was of importance as showing the kind of assistance which sanitary officials received from such inquiries. Indeed, the public were becoming so educated in the importance of sanitation, and were giving valuable help to health officials. Citizens were, in Edinburgh, constituting themselves Vigilance Committees, who took up special districts, made house-to-house visitations, noted deficiencies, and reported them to the local authority. Ladies and gentlemen in easy circumstances were giving valuable help in this direction, and instead of feeling annoyed at this apparent intrusion, it should be welcomed as evidencing the interest that is now taken in the welfare of the poorer classes.

Mr. APPLETON (Beverley) thought that all who could influence authorities should be vigilant in urging them to have good bye-laws, so as to prevent owners of small properties and jerry builders from collecting in the smallest spaces the largest numbers of the poor. The freest circulation of air was the best antidote, next to good water, to the mischief in and around the poor man's house.

Dr. ARTHUR ROBERTS said that in Keighley public opinion had been very much improved, and the builders were erecting a better class of houses—generally through house. All houses were trapped and disconnected. They also endeavoured to get them to plant gardens in front of the houses, and the builders were beginning to do so.

THE DISPOSAL OF TOWN REFUSE AND EXCRETAL MATTER.

By MAJOR GREENWOOD, jun., M.D., D.P.H.Lond.

(1) Importance from a public point of view of an inquiry as to whether the methods of dusting now in use in our large towns are the best possible under existing circumstances; whether they can be indefinitely continued in the future, and what system would be the best to adopt (*a*) from a sanitary point, (*b*) from an economic one. (2) Brief review of practices adopted usually by the sanitary authorities. The Public Health Act, 1874, and the Metropolis Local Management Acts of 1855; and their bearing on the construction of suitable dust-bins; the defects and disadvantages of these, their immobility, their situation, their insanitary condition often when empty, the possible sources of disease from them. (3) Can this method of storage be continued in the future? The evils arising from allowing putrescible waste to be stored in the midst of large towns rapidly increase with the population. The probability of a diminution of the death-rate consequent on a more rapid removal of the house refuse changes in the metropolis in this direction. (4) The pail system and its advantages. That it makes absolutely necessary frequent removal of refuse—complaints often arising from faulty administration and inadequate carrying out of details. Small property owners find this system cheaper for themselves, and are endeavouring to inaugurate it. (5) Necessity of covered vehicles for the removal of refuse. Danger and annoyance to the public of the present uncovered carts. Ease with which this can be avoided. Diagram of cart employed by the Town Council of Edinburgh. (6) Disposal of the refuse; difficulties of this. Sanitary science *versus* economy. Manurial properties of the refuse. Dominant idea of Local Boards to get rid of it at the cheapest rate regardless of public danger. Dangerous position in which refuse is often shot. Evils arising from building over recent dust shoots. Arguments against adding to the impurity of the subsoil by burying house refuse. (7) Cremation and its advantages; probably more expensive at present, but not necessarily likely to be so in the future. More adapted for large and united sanitary area. Introduction of destructors into the metropolis. Room for great improvement in the economic working of these. At present all the heat evolved wasted. Advantage of small areas combining to work a destructor in common. (8) Profit derivable from our refuse: this gets less every year. Review of the past in this respect, with special reference to Parish of St Mary, Islington. Result of a return of 22 metropolitan parishes, only two claiming profit. Important bearing of this in the case of refuse removed by contract, as tending to promote sanitary evil. Dr. Corfield's opinion on this. Curious divergence with regard to the cost of dusting and scavenging in the metropolitan area. Probable

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reasons of this. Table showing details of cost of scavenging and dusting in 24 metropolitan parishes. (9) Brief sketch of a scheme for the dusting and scavenging of a large town: (*a*) the whole to be carried out by a local authority; (*b*) the pail system, or some modification thereof to be adopted; (*c*) refuse to be removed in covered cart to a depôt, and thence by a tram or railway line to destructors situated outside the town; (*d*) All the putrescible refuse, except that which can be advantageously used at once as a manure, to be here carbonised. Remarks on a scheme lately tried at the sewage works of the Halifax Corporation, to use the carbonised products of destructors in treating their sewage, and the advantages claimed for this process.

Discussion.

Mr. J. BRINDLEY JAMES, M.R.C.S.Eng.: The conclusions at which the author arrived were the following: 1. The importance of rendering contamination of the surrounding soil by sewers impossible. 2. A chemical system of treatment and utilization as manure of all slops, excreta, &c., without exception. 3. The contamination of all rivers, streams, wells, &c., prevented. 4. The total suppression of cesspools, and prohibition by law of their construction. 5. Each householder to be compelled to burn his own vegetable refuse, and provided with dust pails for periodical removal (as enforced in Bermondsey). 6. Last, but not least, the construction of a parish crematorium for the reduction to ashes, utilisable in themselves, of all refuse otherwise perplexing to dispose of. Fire purifies everything, and this system easily rendered innocuous to those employed in it, would confer an incalculable amount of hygienic benefit on the public at large, whose adoption of the same cannot be too zealously invited.

Dr. E. SLADE-KING (medical officer of health for Great Torrington, Ilfracombe and Dulverton) said that the waste products of man's domestic life part themselves for sanitary purposes into two great divisions: 1. sewage, including all excretal and liquid waste; 2. house refuse, composed of the more solid matters cast away as useless from human habitations, and of the waste materials resulting from the smaller trades and manufactures. House refuse demands the consideration of the sanitarian in three stages—namely, in its formation in and around houses; in its collection and removal; in its treatment and ultimate disposal. As to its formation or accumulation, cupboards, ashpits, and dustholes are condemned as unfit; and the use is advocated of galvanised metal vessels, casks, or boxes, coated with some non-absorbent material, light in weight, fitted with covers. The collection and removal should be done early in the forenoon, at intervals never exceeding four days, by the scavenger, who empties the contents of the ash-boxes one after another into his cart. Certain precautions are necessary to ensure that each householder does his duty by putting out the refuse in time for the collection. As to the treatment and disposal of house refuse, fire seems the only effectual agent which can be employed for its purification and practical destruction. For large populations this can be done by the "destructor," but smaller sanitary authorities object to the cost of its erection and management. Can the house refuse of a small town be sufficiently burnt and purified without the use of expensive apparatus? and will the charred remains be free from nuisance and of marketable value? The answer is "Yes"; and, as an example, a town of 8,000 inhabitants is selected, the quantity of house refuse from which in the year exceeds 2,500 tons. Street sweepings are not included; being rich in manural qualities, they are purchased gladly by farmers and market gardeners for immediate use. The dust heaps of this town having become a scandal and a nuisance, and requiring to be dealt with in a systematic and effectual manner, a small secluded field was rented at agricultural value, and a trench opened therein, 15 feet deep, 25 feet wide, and 65 feet long, leading at either end by a gentle gradient to the surrounding level. Parallel with one side a shelter was provided, consisting of a galvanized metal roof supported by upright posts; under this shed the carts tipped the town refuse. The dust sorter separated with an iron rake stones, clinkers, and other material fit for road making. He kept, as his own perquisites, bones, rags, &c., which the marine storekeeper purchased; while the "soft core," consisting of vegetable and animal refuse, paper, small coal, and combustible material, he distributed along the sloping side of the trench, and then set fire to, gradually covering it with ashes and the rest of the refuse. Thus drying, and then burning, such a heap burns slowly for a month or six weeks without the necessity of relighting. Eventually nought remains but a mass of black ash, highly carbonaceous and free from smell. The organic matter thus charred is of agricultural value, whilst builders purchase it after screening at the rate of 1s. 3d. per load. The slow combustion constantly proceeds at the centre of the mass, destroys all the fumes, gives rise to scarcely any visible smoke, and permits scarcely any smell to be recognized at a distance of more than a few yards. If all is done regularly by the dust-sorter, the process can be carried out cheaply and effectively. The carrying out of such a plan tends to keep the breathing air of towns pure, and to prevent the tainting of milk and drinking water with impure gases; it thus tends certainly to raise the condition of health, particularly among young urban populations, and exercises a very special influence on the occurrence of sore-throat and diarrhœa. If, from the character of the soil or want of space, it is difficult to open out such a trench as above described, a small kiln, on the plan of a lime-kiln, may be substituted. This will cost about £25 or £30 complete, and will deal with 50 or 60 loads a week. This plan of an open trench or small kiln for the burning of town refuse of small populations is all-sufficient. The average cost of collecting, removing, and thus treating by fire the town refuse of an urban population (8,000) for twelve months has been for carts, horses, and general wages (including extra for Sunday work at fish shops), £237 9s.; the average total quantity collected being 2,485 tons. The sale of ashes to builders and farmers has realised £45 10s.

Mr. D. EDGAR FLINN, F.R.C.S.I. (Kingston) said The immediate removal of all refuse and filth was the most essential element in the public cleansing of towns. Even to deposit refuse temporarily on the ground was dangerous, as the atmosphere of the dwelling-house was very much affected by the state of the atmosphere of the soil near it. The daily door-to-door collection at a stated early hour each morning, by means of the portable dust-bins supplied by the authorities, and large enough to contain the refuse collected during the twenty-four hours, was a system working well in a large number of towns. The portable pail-collection of house refuse should be enforced by every sanitary authority, for it appeared to be the best and readiest system, each householder above a certain rating being supplied with a pail at a small charge, and the poorer class of houses being supplied with them free of cost. In small courtways one large pail could be placed in a convenient position, and would suffice for three or four cottages. These should be emptied each morning by the corporation at an early hour. In each sanitary authority there should be a specially appointed cleansing committee, whose duty it would be to see that the daily public cleansing of a town in all its details should be systematically and properly carried out. It is surprising how little has been achieved in our best and wealthiest towns, to provide the working classes with suitable dwellings, and with sanitary accommodation likely to train them into habits of cleanliness. The three essential accessories—drainage, closet accommodation, and water supply—being frequently defective and inadequate to the requirements, it was well nigh as impossible for any corporation or public body to keep the courtways and laneways of a town in a cleanly condition

unless such places were well paved, or, better still, concreted. It was probable that in the near future a Ministry of Public Health would be formed, with a responsible minister who would have a seat in the Cabinet. Sanitary legislation would thus receive an impetus, and a marked improvement in each branch would be the result. The cleansing of towns had a marked determining effect on the death-rate of a population. Since the inauguration of the system of domestic and public cleansing in the city of Dublin, some seven or eight years ago, coupled with a firm administration of the provisions of the Public Health Act, the death-rate had declined, and diseases of an infectious character were not so frequent as formerly. The destruction of the first germ of disease was of the utmost importance, and it was to the houses of those resident in the courts and laneways of our cities and towns, that the lesson should be taught that national health lay in the individual cleanliness and surroundings of the house and its inmates.

Dr. C. F. Moore, M.D., F.R.C.S. (Dublin), said that the disposal of town refuse and excremental matter has, since the visitations of epidemic cholera in 1854–66, and previously in 1849, occupied a prominent place in public medicine. Dr. Moore drew attention to the endeavours which had been made in this direction, the subject having become one of great importance by reason of the great increase of town populations within the present century. The subject embraced the great main-drainage system, such as that of London, to which, however, more than a passing reference was not made; the removal and utilization or destruction of town refuse, and the treatment and disposal of excremental matter by other methods than that of sewers. The great objects of the latter is the disposal, without creating a nuisance or injury to the public health, of excremental matter in such a way, if possible, as to fertilize the ground. The paper contained a brief notice of certain leading methods for that end, with an appendix giving fuller details of the same. One great difficulty in carrying out the disposal of excremental matter by other means than by a system of sewers in many parts of these countries appears to be the absence of a class of persons who will faithfully discharge the duty in a thorough and effective manner. The Chinese and Japanese afforded examples of this mode of treatment of such matters of great antiquity and effectiveness.

Mr. H. T. Parsons remarked that the objections raised by the speakers to the dust-bin system as carried out in London and other water-closet towns, applied with tenfold force to the midden privy system in vogue in northern towns. He pointed out the advantages of small portable receptacles in saving labour and nuisance by the contents being emptied direct into the cart instead of repeatedly depositing it on the ground and shovelling it up again. He also pointed out that it was unnecessary that ashpits should be made large enough for a man to work inside. The refuse should be collected at short intervals from each house in turn, not waiting for complaints to be made.

Mr. C. M. Jessop (London) said that from his experience in the parish of Paddington, householders would not properly make use of the dust-carts as they came round, and that when the cart did not call, they did not complain to the surveyor. There were various kinds of dust-bins, some of brick, four feet deep, very difficult to be emptied completely; others of small movable covered dust-bins, which, in his opinion, were the best form; and the county council should compel each householder to take the proper steps to have removed the dust.

Dr. Spottiswoode Cameron (Huddersfield) could not agree with the last speaker that the sanitary authority should expect the householder to give them notice when it was necessary they should do their own work. It was the duty of the authority so to arrange their work that the dust-bin should be emptied long before it was full. There was one way, however, in which the householder might greatly lessen the work of the scavenger, and that was by establishing each one a small destructor in his own house. Dr. Cameron's practice was to insist in his own house that all vegetable and animal refuse should be placed each night behind the kitchen fire, and raked next morning when dry into the fire and there cremated. In this manner, especially with the use of Mr. Teale's economisers, the amount of refuse would be immensely reduced. The theoretically perfect plan was to remove the house refuse every day, as was, he believed, done in Edinburgh still. Everyone would have cause to condemn the midden, and even the tub or pail system was only a sort of improvement upon it. The latter had its advantages in limiting, for instance, the spread of infection from cases of enteric fever which could not be taken to hospital. The providing of a department for such cases and the supply of strong disinfectants for use in them, had helped greatly to the limitation of this fever in Huddersfield, and when the water-carriage system came to be adopted in that town, he should still recommend the continued use of pails for cases of enteric fever.

Dr. Littlejohn (Edinburgh) agreed with the chairman that no more important subject could be discussed. He was convinced that the remedy for the nuisances connected with the accumulation of domestic refuse was daily removal, and that to be undertaken by the local authority. In Edinburgh this had been satisfactorily carried out. All refuse had to be brought to the street in suitable receptacles, and these were emptied morning and evening in the poorer districts, and every morning in the New Town. The water-carriage system obtained in Edinburgh, and the effect had been that the commercial value of the refuse had been declining from year to year; and now the farmers were unwilling to purchase it. The solution of the present difficulty was destruction by fire. He regretted to hear members advocating the retention of the dust-bin in London. Its existence was a nuisance, and sooner or later the metropolis must face the question of daily removal. The existence of decaying material so close to dwellings must be prejudicial to health, and the principle ought to be condemned by the department.

Dr. Caldwell Smith agreed with the remarks of the previous speaker (Dr. Littlejohn) in regard to the advisability of daily removal. He also thought that the first thing to do was to get the corporations to take over the whole question of disposal and collection of refuse, and not to let it out to contractors. Only by doing this could the matter be done efficiently and well. In a town in Scotland lately the farmers had absolutely refused to remove the manure from ashpits, as they find it is of little manurial value.

On the Sources of Lead Poisoning in the Arts and Manufactures.

By Dr. J. T. Arlidge, Physician to the North Staffordshire Infirmary.

After a brief reference to the wide use of lead in the arts and manufactures, and the practical value of knowing where its effects may be looked for, and under what forms the metal exerts its poisonous influences, Dr. Arlidge proceeded with the consideration of the last-mentioned problem under three heads,—namely, 1. Lead in the solid form, as lead ore, as metallic lead, and as an alloy; 2. In the form of its salts, whether in powder or in solution; and 3. In a mixed form, with oils and fluxes. In the form of ore it is productive of plumbism among the miners and smelters, being injurious to the former chiefly in the shape of dust, and to the latter in that of vapour. It is, too, as a vapour that it produces its noxious effects among the makers of the oxides of lead in the process of calcination. In the case of metallic lead, plumbism is a result among those who frequently handle it, such as file cutters, the rollers of sheet lead, the makers of leaden pipes and utensils, of shot and lead foil, weavers employed at Jacquard looms furnished with weights, plumbers, casters of leaden toys and of letter type. In the last named it enters as an alloy, and as such at times affects injuriously compositors. In the character

of alloy it proves mischievous with pewterers, the makers of soft metallic capsules and of inferior German silver or pinchbeck. Further, metallic lead and lead alloys become indirectly the cause of illness when employed to form utensils for the storage or preparation of articles of food or of luxury, as, for instance, snuff and tobacco, or in the construction of pipes for conducting or drawing off fluids. Even in the shape of a comb metallic lead has been noted to cause its characteristic results. But more potent and wide-reaching effects follows the manufacture and uses of the salts of lead. Foremost among these are white and red lead, and, in a secondary place, the acetate and oxides, such as minium. The making of white or the carbonate of lead is a very large industry, destructive of health in all its details, and this chiefly by the evolution of dust, which enters the digestive canal. Numerous inventions have been introduced to lessen the ill results of the trade, but hitherto with imperfect success, and the old-fashioned method held its ground by reason of producing a material found by painters to have a better "body," and to cover better the surfaces painted. As house painters are the chief users of white lead, they are the commonest sufferers in the community at large of plumbism. But, turning to special occupations, there is found an even larger proportion to the whole number using it in various forms and methods among pottery artisans. Again, its poisonous consequences are encountered among the mixers of paints and colour makers, among those employing it as a flux, or in the preparation of enamels or glazing materials, such as are used to embellish walking-sticks and umbrellas, to give smoothness and polish to the leather lining of hats, or to the exterior of straw hats, or to playing and visiting cards, and many fancy articles of stationery, to glaze earthenware and china, or iron vessels used for cooking, or iron plates for advertisements, or ornamental card and metal boxes. Litharge is much employed by plumbers and engineers. It occurs in polishing powders for metals, and in this form is seen in cutlery and electro-plate factories, and in polishing brass utensils. It is a component of glass, and the "mixers" now and then suffer from it, but more frequently the glass polishers, who dress the wheels with it. In a state of powder dusted on a surface, either by itself or mixed with other matters to produce colour, the carbonate or the oxides are used in the process of "ground laying" as practised in the potteries, and in the preparing of coloured paper and of coloured type. Mixed with water and other media, the same salts of lead are used in adorning common earthenware, and in the dangerous art of majolica painting. In its commonest combination with oil, as ordinary paint, it has been already referred to as the cause of plumbism among house painters. Another class of workmen its ill effects are seen among are the makers of floor-cloth and linoleum. Other miscellaneous trade operations in which lead plays its part as a poison are found in the business of lapidaries and cameo makers; in that of brush makers, who employ it to colour the hair or bristles; in that of picture-frame making, where the raised pattern is formed by a sort of cement or putty, in which lead enters as an ingredient; in the less justifiable operations of whitening Brussels lace, and of colouring and weighting of sewing threads and woven tissues; in the colouring of vulcanised india-rubber, so commonly used for "feeding bottles." But we have likewise to deplore the surreptitious use of lead salts, as, for example, of the chromate or oxide to adulterate snuff; or, for the sake of colour, to embellish sweetmeats; or to serve as a component in hairwashes and cosmetics; or to give false weight to cayenne powder. To make the survey of the sources of lead poisoning more complete, the accidental introduction of the metal in articles of food may be mentioned as occurring in drinking water, under conditions so well studied by sanitarians; in porter, beer, cider, and lemonade, or fruit juices, any of which may have stood in contact with lead or its alloys in the form of pipes or capsules; or in bottles carelessly cleansed with shot; in solid, but moist or deliquescent, food preserved in lead-foil, or so-called tin cans with soldered joints, or in food cooked or salted in vessels on the surface of which lead occurs as a glaze, or else which have it enter into their structure. Lastly, whilst reserving the study of the symptomatology and pathology of the poison for another occasion, the writer remarked generally on its slow but ever progressive action on the economy when not taken in actually poisonous doses.

Discussion.

Dr. SINCLAIR WHITE remarked that lead poisoning in cutters were not so prevalent as formerly. This improvement was due to the stricter observance of cleanliness by the workpeople.

Dr. WHITHAM said it was remarkable that plumbism was not common amongst artists. They frequently ate hurried meals in the studio, without taking the slightest precaution. Dr. Allbutt had stated that he had never met with a case.

DISEASES AND INJURIES CAUSED BY SPECIAL OCCUPATIONS.

By Dr. ARLIDGE.

He remarked that among the causes of disease the effects of occupation had not been adequately studied. To establish the study of industrial diseases upon a sound footing it was necessary to ascertain the numbers engaged in a manufacture, the diseases occurring among them for a series of years, the character of those diseases, and the conditions of employment and the materials used in performing it. The inquiries to be presented were of a fourfold character: 1. statistical; 2. pathological; 3. technical; 4. sanitary. It was a simple task to tabulate cases met with in private, in dispensary, and in hospital practice in such a manner as to exhibit in a series of columns the name, the sex, the age, the occupation, and the disease, and when a sufficient number were registered it needed only an easy piece of arithmetic to sum them up, and to calculate for each trade the proportion in which any specified disease prevailed among its followers. The second class of inquiries were those directed to pathological details; researches into the mode of production of any special lesion attaching to a business; into its intrinsic character, its course, and progress. Each staple trade of the country had in itself some peculiar health condition residing in the nature of the work it entailed, but still oftener in that of the materials employed; and to illustrate or unfold the pathology of its resultant lesions opened up a field of investigation of wide interest, and hitherto little worked. The third group of inquiries to be instituted he had called technical, inasmuch as their object was to ascertain the nature of the manufacturing processes resorted to, and their relations to health. From such inquiries they sought to learn what were the sources of trade diseases; if heat, or vapour, or noxious and poisonous gases, or poison in a solid, vaporous, or fluid form; if compressed or rarefied air, or exposure to intense light or sound, or over-exercise of particular muscles, or whatever other morbific agency could be detected. The last group, sanitary inquiries, aimed at the collection of facts as to the active or sedentary nature of the work performed and the amount of physical exertion entailed. The labour, if carried on as associated labour in factories, or as domestic in the houses or small shops of artizans; if performed on the surface of the earth, or beneath it; if in the open air with exposure to weather, or in confined places; if not only day but also night work be a condition of employment. Other matters to be kept in view were the number of working hours, the extent of intermissions of labour; and if they included returns as to accidents in the programme, they must ascertain the liability to their occurrence and the circumstances to which they were attributed.

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Discussion.

Dr. CALDWELL SMITH thanked Dr. Arlidge for his educative paper, and stated that he had hoped to present for discussion before the section a paper on the death-rate of miners from diseases of the lungs, from the passing of the Mines Act, when better ventilation was instituted. Such an inquiry was suggested to him by the statement of Dr. Naismith, of Cowdenheath, that the death-rate of miners from such diseases was almost the same as in the rest of the population. Dr. Arlidge, in his admirable lectures, somewhat dissented from this opinion; and, as far as his (the speaker's) inquiry extended, he could positively affirm that Dr. Naismith was taking too roseate a view of the miners' occupation. He hoped to publish a paper giving death-rates from diseases of lungs among 12,000 miners in adjoining districts in Scotland.

Dr. SINCLAIR WHITE hoped Dr. Arlidge's paper would have the effect of stirring up medical officers of health to take a greater interest in trade mortality. He had analyzed the deaths occurring in some thirty Sheffield trades for three years, and hoped that medical officers in other towns would follow his example. He was able to demonstrate that the high death-rate which obtained among cutlers and some other workmen thirty or forty years ago has been largely reduced.

Dr. A. S. UNDERHILL referred to the almost total cessation of special disease of the lungs amongst colliers in the South Staffordshire district. Since the passing of the Mines Regulation Act, no case, pathological or otherwise, had been shown at the Birmingham Societies. Since that time, and at the hospital with which he was connected, no case had been received for fifteen years, although it was situated in the midst of the coal-field of South Staffordshire. He attributed this cessation of special disease to the better ventilation of the mines, and to the fact that in his district the coal measures were exceptionally deep.

SANITARY MATTERS IN GLASGOW.

(*From Our Own Correspondent.*)

Clinical instruction in infectious diseases.

DR. ALLAN, the able Physician-Superintendent of the City of Glasgow Fever Hospital, has just published for private circulation a pamphlet of twenty-four pages, containing three short addresses delivered to the students of the Belvidere Clinique in connection with the instruction in fever there in 1885, 1888, and 1889, and reprinted from the *Glasgow Medical Journal*.

Dr. Allan points out to medical students the importance of acquiring a practical acquaintance with zymotic diseases. Any medical student who has neglected this part of his education is certain to suffer in his reputation, purse, and person. He holds that the last of these is not a fanciful or unimportant consideration. The personal safety of the medical attendant frequently depends on his ability to recognize infectious diseases when he meets them, so that he may take reasonable precautions, and avoid reckless or unnecessary risks. He illustrates this by the too common case of a young medical graduate innocent of all practical acquaintance with fever contracting typhus whilst attempting to diagnose what he considered a case of pulmonary catarrh. Had this young doctor been able to recognize the "typhus rash," he would not have exposed himself and the poor people of the house and the sympathetic neighbours so recklessly and needlessly. Again, another young doctor is not familiar with the rashes of measles and scarlet fever, and a blunder may seriously injure his budding professional reputation. After detailing the advantages of such instruction to prospective officers of health, army, navy, or emigration surgeons, Dr. Allan gives a brief history of the Belvidere Clinique. At the urgent request of several friends for years past that he should give clinical instruction at Belvidere, and looking to the fact that it was the only hospital in Glasgow which receives infectious diseases, he resolved to undertake the duty, having acquired the necessary permission from the health committee and the promise of the co-operation and sympathy of the teachers of medicine. In 1884, printed notices were sent to the various medical schools and hospitals in Glasgow, intimating that there would be a summer course of clinical instruction at Belvidere Hospital. The result was that three students turned up, and these constituted the first summer class. Nothing daunted by this apparent apathy, next summer, 1885, he had eighteen students; in the spring of 1886 a class of six; in the summer of 1886 there was no class, only three names being sent in. In the summer of 1887 no class, only nine intimations having been received. In the summer of 1888 seventeen students, and this summer there are forty on the roll. The students are taught at the bedside, although it is sometimes desirable to give little lectures away from the patients' side. The good rashes visible at the time of visit are explained, with the characteristic features of the disease in each case, its treatment and prognosis. In this way they become familiar with the normal or typical forms of the various diseases, and also with the diagnosis of ill-developed or abnormal forms of disease. This latter class, he says, is the most difficult to contend with, both in private practice and in hospital. The first half of the course is devoted to demonstration of the various infectious diseases. The descriptions of the appearances will be dictated to the students, who shall enter them in their note-books by the bedside, where they will have an opportunity of verifying the facts for themselves. At the same time, the treatment will be indicated. On the second half of the course the students are taken to fresh cases, and taught to diagnose them by a series of questions. Dr. Allan says "it is argued that students are afraid of contracting fever and breaking up their curriculum. No doubt there is a certain amount of danger in visiting the wards of a fever hospital; but I may state that I am not aware of a single case in which a student has contracted infectious disease by visiting Belvidere. I do not say this in a boastful way, I merely mention it as a fact."

Belvidere Hospital presents a unique field for the clinical study of infectious diseases, and Dr. Allan from his long and varied experience in this special branch of medical science has few equals in his profession. It is to be hoped, therefore, that these classes will be more taken advantage of in the future. Our newly fledged doctors have been woefully ignorant hitherto regarding infectious diseases.

The sanitary clauses of the Local Government (Scotland) Bill.

The Local Government Bill for Scotland has now passed the Houses of Parliament, and will come into operation in May next. Outside of burghs and police burghs the provisions of the Public Health Acts are to be carried out in future by the newly elected district committees. These district committees will consist of the members of the county council elected for these districts, with one representative from each parochial board. (At present the local authorities in the rural districts are the "poor law" or as they are termed "parochial" boards). Some very important changes relating to public health, and some of which are in advance of the Acts of England, will come into operation. The council of every county, shall appoint and pay a medical officer or medical officers, and a sanitary inspector or sanitary inspectors, who shall not hold any other appointment or engage in private practice or employment without express written consent of the council. No person shall hereafter be appointed the medical officer of any county or district, unless he is a registered medical practitioner, and after Jan. 1, 1893, no person shall be appointed medical officer for a county district or parish containing a population of 30,000 or upwards, unless he is qualified as above-mentioned, and also either

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is registered on the *Medical Register* as the holder of a diploma in sanitary science, public health, or state medicine, under section 21 of the Medical Act 1886. No person shall, except with the express consent of the board of supervision, be appointed as the sanitary inspector for a county, unless he has been, during the three consecutive years preceding his appointment, the sanitary inspector of a local authority under the Public Health Acts. Every medical officer and every sanitary inspector appointed under this Act, or under the Public Health Acts, shall be removable from office only with the sanction of the board of supervision. County councils shall have the enforcement of the Rivers Pollution Prevention Act, and the Secretary for Scotland is empowered, on application being made to him by the council of any of the counties and burghs through or by which a river or any portion of a river passes, to establish a joint committee and confer on them all the powers of a sanitary authority under the said Act. There are other clauses dealing with the tenure of the existing officers. If the new county councils decide to abolish those officer's positions they must grant compensation, &c. It will be seen, therefore, that this Act will cause a complete revolution in the rural districts of Scotland by (1) Compulsory appointment of sanitary inspectors and medical officers, who must devote their whole time to the duties; (2) The fixity of tenure of these officers, who must be paid reasonable salaries and must be thoroughly qualified men; and (3) by the establishment of a new and complete system of local government in health affairs throughout the rural districts where at present sanitation is practically a dead letter. Considerable credit is due to the Sanitary Association of Scotland, and particularly to Mr. McKay, their energetic secretary, for impressing upon the Lord Advocate the desirability and necessity of those principal provisions.

SANITARY MATTERS IN AMERICA.

(*From our own Correspondent.*)

THERE will soon be five women at work as inspectors of factories for the health department of Chicago. It is not a fair presumption that their line of duty will include the steel works, the rolling-mills, the packing-houses, the railway-shops, or similar large establishments, but they will find their *métier* in industrial departments where their own sex is, in the main, employed. There is in this direction a broad field which demands inspection and reform. Many of the most serious of our social evils have their origin in the ill-ventilated factories in which women are engaged for a pittance from twelve to fourteen hours a day. It may not be possible to increase the wages of these wretched slaves, but it may be within the reach of the health department to provide that, while they may be robbed, they shall not die from foul air and filthy surroundings. Many a poor wage-worker, rebelling against the infelicitous character of her environment, flies to other evils, and is lost. It might not be a bad thing to add a woman or two to the tenement-house inspection, and also to household nuisances and lack of sanitation. There is many a case of diphtheria, scarlet fever, and other forms of contagious diseases hidden away in closets and nooks and corners which cannot be detected by the eyes of male inspectors. For this class of inspection women would be invaluable. The woman has a more microscopic vision and a keener scent than a man, and can hunt out many a serious nuisance that would be invisible to the other.

Professor W. H. Brewer, of New Haven, the Rev. Dr. J. N. Chapin, of Meriden, and John W. Bacon, of Danbury, the commission appointed by Governor Bulkeley to delineate a sanitary and topographical survey of Connecticut, have arranged details of the proposed work. The map will contain thirty sheets, each containing a minute measurement of the extent of level tracts, of the elevations of land, of the height of dams, of the outlines of woodlands, and of swamp areas. Fifty thousand dollars have been appropriated for this purpose. The Federal Government and the State furnish $25,000 each, and if the expenses exceed that appropriation the Federal Government will pay the additional money. Professor Brewer says the work will be completed in two years.

Dr. J. F. Combe, who was detailed by the Surgeon-General of the Marine Hospital Service to make an investigation of rumours of yellow fever at the port of Tampico, Mexico, has made a detailed report on the subject. He says that on his arrival at Tampico he made himself known to the members of the profession, and was conducted through the hospitals, civil and military; that he examined the records, and made as thorough an investigation as possible. On all sides he met with assurances of the non-existence of yellow fever in any of its forms. At present, he says, there is not a suspicious or even a sporadic case of yellow fever in Tampico. This, however, he regards as surprising, as the city is in constant communication with Vera Cruz, where the disease is said to be epidemic and annually prevalent. Malaria abounds, he says, very frequently, assuming its most complicated forms. This is principally owing to the negligence among the lower classes and the stubbornness of those ignorant natives who superstitiously flee from medical attention or advice. The sanitary condition of Tampico is said to be good.

The State Board of Health of Indiana has been notified of the existence of several cases of glanders in Parke County, and in one instance a prominent farmer contracted the disease and has since died. He was ploughing with one of the glandered horses when the animal threw its head round and struck the farmer in the face, slightly bruising the skin.

RETIREMENT OF THE SURVEYOR OF CHELSEA.

ON July 16 there was a great gathering at the Town Hall of gentlemen concerned in the local government of Chelsea, for the purpose of making various presentations to Mr. G. R. STRACHAN, C.E., on the occasion of his retirement from the post of Surveyor to the Vestry of Chelsea. The chair was taken by Earl CADOGAN. The chief presentation came from the members of the Vestry, and consisted of a large and very handsome writing table in English oak, a silver tea service, a gold watch for Mrs. Strachan, and an illuminated address.

Lord CADOGAN said it was difficult to speak of Mr. Strachan in his presence, and in the presence of those who had shared his labours, and were better able to do justice to his worth than he could hope to do. But he also had had occasion to see a great deal of Mr. Strachan's work, and to join with him in much that he had done, and he was sure that, much as they congratulated Mr. Strachan on the cause of his retirement, they as deeply regretted the loss which they were about to incur in his retirement from the position of surveyor to the parish. It was a position which required firmness, tact, ability, energy, and the power of dealing with men of all classes and all shades of opinion. In all these respects Mr. Strachan had shown himself worthy of the high office he had held. His lordship proceeded to enumerate some of the chief of Mr. Strachan's undertakings in Chelsea, among them the laying of wood pavement, the negotiation of electric lighting concessions, the conversion of St. Luke's Churchyard into a public garden, the organization of works for the relief of the unemployed poor in times of exceptional distress, and the removal of snow. They all knew how many difficulties Mr. Strachan had surmounted, and how severe was the labour he had carried through. He did not think it necessary to detain his hearers with

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dilation upon merits they all so fully appreciated, and it was now his agreeable duty to present to Mr. Strachan the testimonial for which the Vestry had subscribed. The testimonial took the form of an address, a writing desk, and a silver tea service. The address was as follows:—

"This testimonial, together with a writing table and a piece of silver plate, was presented to Mr. George R. Strachan, C.E., by the members of the Vestry of Chelsea, on the occasion of his resigning the office of Surveyor to the Vestry for a better appointment, as a mark of their personal appreciation of the able manner in which he had discharged the duties of the office, and of the uprightness and integrity shown by him during the term of his appointment, from November 1884 to July 1889.

"Signed, on behalf of the Members of the Vestry,

"CADOGAN."

(Here followed the signatures of sixty-six members of the Vestry.)

The desk was inscribed: "Presented to Mr. George R. Strachan, C.E., by the Right Hon. the Earl Cadogan, on behalf of the Members of the Chelsea Vestry, July 16, 1889."

The tea service was inscribed: "This service was presented to Mr. G. R. Strachan, C.E., as a mark of esteem and respect, by the Members of the Chelsea Vestry."

Lord CADOGAN concluded: With these few words of introduction, which I can assure you inadequately convey the estimation in which you are held, and the sentiments with which these testimonials are accompanied, I beg to offer them to you in the name of the Vestry, and to wish you every success in your future life.

Mr. STRACHAN replied, that it would be affectation on his part to dissemble the pride and satisfaction which these proceedings were to him. To have earned the regard of which these handsome presents were the tokens was a source of infinite gratification to him, though he could not but know that their esteem was more the outcome of their own kindness of heart than of any merits of his own. To receive the approbation of one's masters was indeed a high honour, and from such a body as the Chelsea Vestry it was an exceptional distinction. He believed that such a recognition as this of service done would be of inestimable value. It placed it in his power to prove at any future time in what regard he had been held, and would stimulate his future life in the endeavour not to forfeit the right to such esteem.

Mr. WHITMORE, M.P., said that he, as member for Chelsea, would like to add his humble tribute of regard and respect for Mr. Strachan. In constant communication with Mr. Strachan, he had always received from him the greatest courtesy and kindness, and through him had been able to gain a knowledge of local affairs and of the progress of local business which otherwise he could never have obtained. He referred at length to the services rendered by Mr. Strachan in connection with relief works, and added that he looked upon the report which Mr. Strachan recently presented to the Vestry with regard to the probable demolition of property in the northern part of the borough. As offering very valuable suggestions not only to the Vestry, but to all those who would wish to see that whenever demolitions of house property were carried out in London, sufficient care should be taken in affording adequate accommodation to the poor who might be displaced. Wherever Mr. Strachan might go, and whatever his future might be, they would always watch his career with the greatest sympathy and interest.

The RECTOR said they had had an incorruptible servant of the greatest possible energy and talent, and in parting with him he (the Rector) was exceedingly anxious to be allowed to join in the expressions of regret and of good wishes for Mr. Strachan's future.

A valuable case of drawing instruments was presented to Mr. Strachan on behalf of the officers of the Vestry. The case was inscribed: "Presented to G. R. Strachan, Esq., by his brother officers of the Chelsea Vestry, in token of their regard for him and for his character and abilities."

In addition to these presentations, Mr. Strachan received from the Vestry workmen an ivory rule and a set of ivory travelling chessmen, together with the following gratifying address:—

"This testimonial is presented by the workmen of the Vestry of Chelsea to Mr. George Richardson Strachan, A.M.I.C.E., Surveyor to the Vestry, as a mark of respect and gratitude for the interest he has always taken in their welfare; and especially in the origination of the Sick and Accident Fund, which has recently received the sanction of the Vestry. Whilst expressing sincere regret at his retirement from Chelsea, they earnestly hope that future prosperity and success will attend all his undertakings, and that wherever duty may lead, or in whatever circle of friends he may be placed, he may find the same kindly feelings of regard and esteem shown him as in the humble but heartfelt good wishes of the workmen of the Vestry of Chelsea.

"Signed on behalf of the workmen,

"W. Holloway, D. Riley, B. Badger, Dan Buckley, Geo. Kemble, Thos. D. Norton, R. Wilkins.

"JAMES J MACKAY,

"Chelsea, "Honorary Secretary.

"July 18, 1889."

THE HYGIENIC SECTION OF THE PARIS EXHIBITION.

ARTICLE II.

IN our article last month on the above section of the exhibition we dealt mainly with two subjects of very general importance, the questions of drainage and the purification of drinking water. Since then an important congress on hygiene has been held in Paris, composed of some 600 delegates, thirty nationalities being represented, which it is thought will lead to many beneficial results.

Before dealing with the subjects under discussion at the congress, we will proceed to complete our notice of the exhibits belonging to the hygienic section at the exhibition. We will first turn our attention to the exhibits of mineral waters in which France is so rich. There are plans of the various mineral water towns, showing the machines used for bottling them, and each exhibitor gives full details of the minerals and salts contained in the waters and the maladies they counteract. The waters of Châtel-Guyon, Puy de Dôme, the Kissingen of France, are represented. The value of these waters was known to the Romans; they are hot, effervescing, acidulated, and purgative. Châtel-Guyon is situated in the centre of France in a picturesque valley. The time for invalids is from May 15 to October 15. The chief characteristic in the chemical composition of these waters is the amount of chloride of magnesium they contain, which no other mineral water possesses in so large a quantity. The waters of Châtel-Guyon constitute one of the most valuable therapeutical agents, and are invaluable to sufferers from indigestion, constipation, gastro-enteritis, cerebral congestion, and uterine affections. Then there are the waters of Bride-les-Bains, the French Carlsbad, whose season is likewise from May to October. There is a special treatment at Bride-les-Bains for obesity, and the waters are likewise recommended for diseases of the liver, diabetes, dysentery, and other ills the human flesh is heir to. Close to Bride-les-Bains is situated Salins-Moutiers, whose waters are so rich in sodium chloride. Spain, Italy, and even Germany have not waters as rich in that mineral as Salins-Moutiers is, and it is fast taking an important place as a health resort. The value of the waters of Mont-Dore in cases of asthma, phthisis, chronic bronchitis, pulmonary affections, and rhumatism are well known. Monte-Dore possesses eight different sources of mineral waters, seven of which are hot and the eighth is

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cold. Balaruc-les-Bains, situated on the banks of the beautiful lake Than, about two hours' journey from Montpellier, has waters similar to those at Wiesbaden and Bourbonne les Bains, which are valuable to those suffering from paralysis, gout, gravel, scrofula, apoplexy, &c. We are glad to observe that the sanitary conditions of Balaruc are exceptionally good. The waters are rich in a variety of minerals, and especially in the salts of magnesia, lithia and copper. The waters of La Bauche appear to be the richest in iron, and some extraordinary results have been obtained by these waters. Pastilles are now prepared with the extract of salts contained in the water, and are highly recommended by many doctors. Amongst the exhibits of the mineral waters of Santenay are seen pieces of granite and granite gneis, showing whence the great quantity of lithia which these waters contain arises. The celebrated waters of Vals, Vichy, Bourboule, and Royat are, of course, well represented. Amongst the English exhibitors of mineral waters we notice those of the Apollinaris Company, the Salutaris Water Co., and the Reginaris Co. Algeria, New Caledonia, Austro-Hungary, Belgium, Brazil, Spain, Greece, Guatemala, Roumania, Russia, Switzerland, Uruguay and Venezuela, all send exhibits of their mineral waters. These form an interesting study in themselves.

Elaborate and accurate statistical charts showing the rate of mortality in France from diphtheria, typhoid fever, Bright's disease, heart disease, &c., adorn the walls of part of the hygienic section, and there are special ones for Paris and the large towns. It is a curious fact that there are more deaths from heart disease in the southern quarter of Paris than in any other. How this is accounted for we were unable to ascertain.

An exhibit which excites a good deal of interest among the poorer classes who visit this section is that showing the effect produced on children by bad vaccine. It causes them to break out in all manner of painful sores in various parts of their bodies.

Last month we referred to the good work of the ambulance association, but did not we think refer to the ambulance train which is deserving of special mention for its compact and excellent arrangement in every way. At one end is the kitchen, larder, and refrigerator, then come the carriages for the sick and wounded, and next to these the pharmacy and linen carriages and nurse's apartment. Whilst on the subject of medical aid to the military we must not omit to speak of the wonderful Tollet hospital, upon which system a great many hospitals in Paris have been built. Its great beauty lies in the fact that it can be so easily put up or taken down and carried from place to place. It consists of narrow iron girders upon which the canvas rests. The value of the system from a sanitary point of view is that there are no angles in the roof, so that no microbes can congregate; it is in fact a Gothic arch, *the* arch for sanitation. The ladders used in erecting the hospital serve as shelves when the erection work is completed. Everything is arranged to meet the exigencies of war. There is one palpable error in this system, which will no doubt in due course be removed; I refer to the practise of baking bread in close proximity to where the men sleep, which is good neither for the men nor the bread.

Whilst on the subject of exhibits in regard to the military we must speak of the helmets which Messrs. Christie & Co., and Messrs. Lincoln, Bennett & Co., not, however, that these are used solely by the military. In India and other hot countries it is a matter of necessity for everybody to be provided with them, and they are essentially articles of sanitary clothing. Messrs. Lincoln, Bennett & Co. exhibit a doubly-ventilated helmet; the lining which surrounds the head being separated by corks from the body of the helmet, whilst the outer rim of the helmet is arranged so as to allow the air to enter between the outer and the inner covering. Messrs. Cooksey & Co also exhibit some capital helmets; they have a *specialité* in perforated, white, raised, leather lining for all kinds of hats, which keeps the forehead wonderfully cool. Apart from the helmets Messrs. Christie & Co. display, there are several light felt hats, interesting from the fact that they exemplify the various sorts of rabbits' hair used in their manufacture, and valuable on account of their freedom from chemicals in the process of making.

The Cellular Clothing Company, about which we have heard a good deal of late, has a large exhibit full of interest to the lover of hygiene. All their clothing materials, whether they are of wool, silk, or cotton, are made in a stitch resembling netting. The reason for this is to allow of a free current of air, so that the exhalations of the human body can readily escape into the open air, and the air, on the other hand, can reach the whole surface of the body. As a rule, the clothes generally worn in great measure prevent this essential current. The Cellular Clothing Company are one of the few firms who have successfully overcome the difficulty.

Close at hand to the cellular clothing exhibit are various antiseptic fabrics, garments, and other applications of Walery's patent for antiseptic goods.

Speaking of clothing exhibits, brings to mind a display of sanitary floor-cloths shown by the Corticine Floor Covering Company. The beauty of their floor-cloths and cork carpets is that they are impermeable, do not absorb dust, and can be washed at any time. The patterns are variable, rich in colour, and of good design. The Mitcham, Linoleum, and Floor-cloth Company also prove how the dust and germ-absorbing carpet to which everybody clings so tenaciously may be superseded.

Messrs. Treloar & Sons are to the fore with an abundance of cocoa-nut matting exhibits. The matting is cheap, and is easily kept clean.

Of the exhibits of wall-papers, we will first speak of those of Mr. Fisher. These wall-hangings are composed of paper on canvas entirely grounded and printed in oils. They are cheap, and can be scrubbed with soap and water without any harm being done. Turning to the artistic wall-papers, we observe some designed by Mr. Walter Crane and other eminent artists, which are displayed by Messrs. Jeffrey & Co. Messrs. Jeffrey & Co. have assisted in the decorations of the central entrance, the vestibule, and the offices of the British Section Committee. In their own particular exhibit there are all qualities of artistic wall-papers, free from arsenic. Other excellent illustrations of artistic paper-hangings are exhibited by Messrs. Woollams & Co., who, to give visitors a just idea of their exhibits, have built up the side of a room with pictures and prints adorning the wall, and the room partially furnished. Their paper is guaranteed to be entirely free from arsenic. Visitors have a further opportunity of viewing the wall-papers of this firm in the eastern vestibule, near the Porte-Rapp, and which afford a good notion of the extent of their manufacture of these fabrics.

Some novel features are to be noted among the makers of night-lights. From a night-light known as Broad's patent night-light, it will be found that a better light is emitted, due to the wick being plaited instead of twisted. The wick continues to stand upright after the wax surrounding it is all melted, because it is fastened to a small piece of tin. There has long been room for improvements in the night-light manufacture, and they will be readily welcomed amongst those for whom the night-light is an indispensable article. Some, it will be seen, now have a plaster basis, which does away with the service of the saucers, and avoids, to some extent, the risk of fire.

We have already spoken of the first-rate exhibits of Messrs. Doulton & Co., but did not make a complete survey of their newest improvements. Amongst these are a bath water-heater, with automatic regulator for turning down the gas when the water-supply is exhausted, thus preventing explosions. A float valve in a small separate cylinder is used, which is connected with the gas-cock, and as the water falls into the cylinder the floater presses on the cock, and so turns out the gas.

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The simplex Hopper closet is peculiar on account of the entrance into the syphon being so pinched that the water bursts through with greater force, and, therefore, cleanses better.

Another exhibit interesting to sanitarians is seen in a closet with a separate flush for the trap of the overflow pipe from the pan; it often happens that the water in the minor trap is not changed either thoroughly or frequently enough, but with the separate flush much of the danger is overcome. All these exhibits are to be viewed in the immense Machinery Gallery at the farther end of the Champ de Mars.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

"Something attempted, something done."

ARNOLD (Population, 7,215).—Dr. Lamb's report deals chiefly with the incidence of zymotic disease during 1888, small-pox and diphtheria in particular being more than usually persistent. The first case of small-pox, infected from an unknown source, was the centre of contagion to all the others, and by its concealment the disease was able to make headway. The succeeding cases were isolated as soon as the disease developed itself; there was no further spread, and the town was saved from what might have been a serious epidemic. It is remarkable that the first case being in the house of a milk-seller, and the sale of the milk continued through the fortnight of the illness, not a single case of infection from this cause occurred. Considering the frequency with which milk has acted as the carrier of scarlet fever and other poisons, one would expect it to convey readily the poison of small-pox. One-half of the cases of diphtheria were associated with sanitary defects and one-half followed measles. Dr. Lamb particularizes "imperfect scavenging" as the worst part of the sanitation of Arnold, and to this cause must be attributed the typhoid fever cases. Diarrhœa, though prevailing moderately and never very severe, caused five-sixths of the zymotic rate of 3·44 per 1,000. The general death-rate was 17·6 per 1,000.

Small-pox.

Defective scavenging.

BARNSLEY URBAN AND RURAL (Populations, 29,000 and 24,000).—Dr. Michael Sadler has a good deal to say on the subject of isolation in his reports for the year 1888. The epidemic history of the year was such as to demonstrate to the utmost the advantages of this proceeding, an outbreak of small-pox leading to the erection of a temporary building which was of great service in checking the disease. This involved an outlay of some £600, and there is little doubt the money was well spent. That the district will be spared any anxiety for the future in this respect is due to the generosity of a native of the town, who has offered to provide a new fever hospital, on certain conditions, on a site to be chosen by the corporation. Besides isolation wards a special building is to be provided for small-pox, in which provision will be made for passing the infected air through a furnace in accordance with the suggestion of the Hospitals Commission of 1882. This will be the first building of the kind in England. The usual sanitary inspections and other work were carried out during the year, though the work of combating the spread of the small-pox epidemic took up a great amount of time. In the important matters of water supply, sewerage, and sewage disposal, Dr. Sadler reports that the condition of Barnsley was satisfactory. His account of the *rural* district is not quite so favourable, the system of sewers being often incomplete and the scavenging neglected. Each year, however, some advance has been made. With regard to zymotic diseases, there was less scarlatina than in 1887, and not so much enteric or typhoid fever. On the other hand, measles was very prevalent and unusually fatal in some townships. Diphtheria was more prevalent than usual, whilst croup was exceptionally fatal.

Hospital isolation.

New hospital.

BELPER RURAL (Population, 18,983).—In reporting on the amount of sanitary work carried out during 1888, beyond the performance of general routine, Mr. Allen has little to add to previous reports. The district possesses as yet no hospital for infectious diseases, and an outbreak of small-pox, extending to 18 cases, was, therefore, a cause of considerable anxiety. The most strict quarantine was insisted upon; re-vaccination was performed weekly in the neighbourhood, and by constant attention and active interference the disease was at length stamped out. The authority appointed a small committee with power to erect a hospital-tent for the purposes of stricter isolation, but fortunately this expense was avoided, though the compensation for burning clothes and bedding was a serious item. Scarlet fever was prevalent through the autumn months. Children living in isolated cottages in the fields were attacked, where, as far as could be ascertained, no personal communication with other cases had taken place. Mr. Allen's opinion is that the contents of pedlars' baskets are not seldom the carriers of these zymotic poisons. These people go from door to door and are not careful where they place their baskets. The death-rate of the district, 14·1 per 1,000, was one degree higher than that of 1887, but the mean rate is a favourable one, more especially when the excessive infantile mortality, the blot on an otherwise satisfactory picture, is taken into consideration.

Hospital needed.

Small-pox.

Scarlet fever.

BOURNEMOUTH (Population, 32,025).—The very low zymotic death-rate recorded by Mr. Kinsey-Morgan for 1888, ·37 per 1,000, may be regarded as a direct testimony to the healthiness of this town, yet the year was one of decided progress in perfecting its sanitary condition. The comparatively small number of cases of infectious sickness is attributed to the influence of the Model Sanitary Hospital, the cases of scarlet fever and diphtheria imported into the district having been speedily isolated, and the spread of infection checked. The existence of the "quarantine" cottage is also an immense boon, forming, as it does, an intermediate abode to the hospital, and thus providing additional precaution against the risks of contagion. The various districts and premises were thoroughly visited, and were found in generally good condition. Mr. Kinsey-Morgan reports that a better system of ventilation is required in some of the elementary schools, but that their arrangements are on the whole satisfactory. The usual test raids were made under the Adulteration of Food and Drugs Acts, but the food supply is so good that it has not been found necessary to condemn a single article as unwholesome during the past three years. The water supply is also excellent. The death-rate from all causes was 14·0 per 1,000, but, excluding visitors, it amounts only to 9·75.

Infectious hospital.

School ventilation.

Adulteration.

Water.

CROYDON (Population, 95,700).—Dr. Philpot describes the year 1888 as an uneventful one, yet noteworthy as having the lowest death-rate, 13·17 per 1,000, the lowest zymotic rate, 1·27, and the lowest infant mortality, 98, of any year previously recorded. Steady progress was made in many directions, the general condition of the borough being at the close of the year very satisfactory. There is still the need for proper hospital accommodation for infectious diseases. The presence of such diseases as small-pox, typhus, and scarlet fevers during the year, and the doubtful character of home isolation should be sufficient to rouse the authorities to a sense of the need of adding an isolation hospital to their sanitary appliances. Fortunately there was no epidemic; but Dr. Philpot was much occupied

Hospital needed.

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with work in connection with infectious diseases. Diphtheria showed a marked decline, both in prevalence and mortality as compared with 1887; and though five more deaths were recorded from typhoid fever, the cases notified were eleven less. Appended to the report is a summary of the sanitary work, a list of the roads in which a house-to-house inspection was made, and the usual tables of vital statistics.

HANLEY (Population, 55,520).—A severe and fatal epidemic of measles in this town had an adverse influence on the vital statistics of 1888, as it raised the zymotic death-rate far above that of any recent year, and augmented the proportion of infantile mortality, already somewhat in excess. It also increased the responsibilities and labours of the sanitary staff, in that temporary assistance had to be procured, in order to maintain the necessary supervision over cases known to exist. Dr. Swift Walker had also to contend with small-pox; but, thanks to the efficient isolation afforded by the Contagious Diseases Hospital, the epidemic passed off with only 19 cases, and not one of them fatal. The deaths from all causes exceeded the number in the previous year by 136, and when it is noted that the increase in deaths from zymotic diseases was 144, the effects of this disastrous visitation can readily be gauged. The only other disease showing an increase was whooping-cough. Dr. Walker reports that the notification scheme worked well, as by visiting the houses after a notification had been received, many wretched dwellings, which otherwise would not have been found out, were renovated and made habitable and wholesome. The general death-rate was 20·7, and the zymotic rate 4·6 per 1,000.

Measles outbreak. Small-pox. Whooping-cough.

HUDDERSFIELD (Population, 92,825).—Dr. Spottiswoode Cameron reports a death-rate for the second quarter of 1889 of 19·15 per 1,000, against 18·20 per 1,000 in the large towns. Measles and scarlatina had both been prevalent, and the former disease caused no less than 1·25 of the general death-rate. Attention is drawn to the special and fatal prevalence of measles in those parts of the borough lying near the rivers. Dr. Cameron remarks that there is nothing alarming in the bills of mortality, but to further reduce the rates to a satisfactory extent the river must be cleansed and more houses built.

Measles. River.

LIVERPOOL (Population, 599,738).—The health returns of a city second only in population to the metropolis, and with a far greater density, must always be a matter of interest, not only to the inhabitants, but to the general public. The totals are immense, and afford the most striking example of what can be effected by good sanitary work in overcoming, or at least mitigating, the evils and disadvantages of crowding a large number of people on a limited area. Dr. J. Stopford Taylor has shown in previous reports how the gradual reduction of the death-rate has proceeded with the steady progress of sanitary measures, and in 1888 it reached the low rate of 20·3 per 1,000. The work is well-planned and well carried out, and it would be difficult to point out weak spots in the administration, but towards further improvement we would endorse Dr. Taylor's recommendations for increased hospital accommodation, and for greater facilities to the scavenging department to remove more frequently the contents of ashpits. The necessity for the quick removal of all refuse from the proximity of dwelling-houses is universally conceded, but the difficulty lies not so much in the way it could be effected as in the increased cost. The inspection of lodging-houses is an important branch of the work of the city, and involved a total of 37,488 day visits and 5,836 at night. The great and fatal prevalence of small-pox in Sheffield and Preston, and the frequent outbreaks in many Lancashire towns, necessitated much watchfulness on the part of the sanitary staff, owing to the constant and rapid intercourse between the different communities. This anxiety was much increased by the importation of cases by ships from Spain, where the disease was very prevalent, and the passage being a short one the disease was not developed in some instances until after the arrival of the vessels in port. Of 27 cases, 7 were traced to importation from Sheffield, 1 from Preston, 4 from tramps, 8 from ships, and 7 were supposed to have occurred from association with seamen who came from infected ships. A mortality map of typhoid fever appended to the report shows that 1888 was marked by the smallest number of deaths in any year, being 33 fewer than in 1887, and 147 less than the average.

Density of population. Increased hospital accommodation needed. Scavenging. Lodging-houses. Small-pox. Typhoid fever.

MONMOUTH RURAL (Population, 23,694).—Dr. George Willis reports favourably of the sanitary condition of this district, this being maintained by a system of constant inspection. A good deal of work was entailed during 1888 by a severe outbreak of diphtheria which assumed such proportions as to justify a Government inspection. Measles was also prevalent and proved to be the most fatal epidemic form of sickness. But few sanitary defects could be discovered in connection with the cases of diphtheria, and Mr. Spear, the Government Inspector, seems to regard heredity as the probable explanation of the outbreak, sore throats having been common in the district for some years. But in Dr. Willis's opinion this fails to explain a later outbreak. Several cases of typhoid fever were met with but none were fatal. All drainage defects connected therewith were promptly remedied. The death-rate for the year was 13·54 per 1,000.

Diphtheria.

OLDHAM (Population, 138,220).—Dr. James Niven is continuing his crusade against the unsanitary influences at work in Oldham, and that the year 1888 was marked by the lowest death-rate on record is a gratifying circumstance. A number of important questions were dealt with during the year, including the smoke question, the nuisance arising from the discharge of hot water into the sewers, the condition of the streets and courts of Oldham, the condition of the tips, the methods of dealing with sewage, and other matters, and a distinct advance has been made in many directions. More work was done in house improvement than has ever been done before. Courts were paved and sewered, and cases of over-crowding abated. The matter which occupied the greatest amount of public attention during the year was small-pox. Commencing at the end of December 1887, small-pox continued to increase up to May 1888, after which it rapidly declined, and in the boginning of September, suddenly died out. At no time did it reach anything like alarming dimensions, although the number of cases was sufficiently large and scattered to necessitate the utmost vigilance and promptness. In a small outbreak of typhoid fever which cropped up suddenly at the end of October, Dr. Niven had no difficulty whatever in excluding all but two causes, viz. contamination of the water supply and a sudden development of conditions of the subsoil, which favoured the growth of the infective matter of typhoid. A corresponding experience in Manchester and Salford seemed to point to this latter condition as part of causation. If there were contamination of the water in Oldham it probably occurred after the entrance of the main into the town. As a means of ensuring a pure milk supply, Dr. Niven instituted an inspection of the neighbouring farm-houses, and the results show that a serious task is in prospect to bring them into a sanitary condition, and that it is necessary that this duty should be promptly and efficiently performed. The outstanding features of the year may be said to be the lowered mortality, especially in young children, the diminished zymotic rate, the lowered death-rate from phthisis, and the increase, at all ages, of the death-rate from pneumonia.

House improvement. Small-pox. Typhoid outbreak. Inspection of farms.

SMETHWICK (Population, 31,000).—Mr. Marsh Jack-

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son's first annual report to this authority shows that he has been diligently acquainting himself with the deficiences in the sanitary condition of the district, and has with equal zeal taken upon himself their reform. The existing closet and ashpit arrangements he considers altogether unsatisfactory. Most of the pits are too large in all their dimensions; scarcely ever is the soakage of liquid sewage into the surrounding ground provided against, and in only a very few instances is there any system of proper covering or ventilation. The use of well-water for drinking purposes was found to have been responsible for many of the typhoid fever cases that came under notice; 31 samples were submitted for analysis, and of these 20 were condemned. The statistics of the year do not call for special comment. There was a slight increase in the death-rate, 17·1 per 1,000 against 16·7 in the previous year, and zymotic diseases gave a death-rate of 1·7 per 1,000. The epidemics that prevailed were fortunately of a mild type.

Ashpits too large and uncovered.

Well-water and fever.

STAFFORD (Population, 18,928).—Dr. F. Milnes Blumer records for the year 1888 a decrease in the population, which, with a lower marriage-rate and a considerably smaller number of births, must undoubtedly be attributed to a common cause, namely, depression in the staple trade of the Borough. In other respects the returns are much about the average of previous years, and it is satisfactory to find that no serious epidemic had to be recorded. Small-pox was twice introduced, but thanks to the foresight of the health committee in providing, in the beginning of the year, the means for dealing with this disease, a check was put upon its spread. Some cases of diphtheria were found to be connected with a polluted water supply, and one was associated with the emanations from a cellar which was flooded by the overflow from a small cess-tank and a choked drain. Dr. Blumer calls attention to the large and increasing number of slaughter-houses, and points out the desirability of erecting a public abattoir. The supervision of bakehouses, lodging-houses, &c., was well carried out, and many defects were remedied.

Small-pox.

Diphtheria and water.

Abattoir needed.

STRETFORD (Population, 21,000). Mr. W. J. Heslop gives a very fair account of the routine work in his district, but there is not much in the annual report for 1888 which calls for comment. Improvements of a minor character were effected during the year and attention is directed to the possibility of further improvement in the poorer class of property. No epidemic of a serious nature had to be dealt with, scarlet fever of a mild type being the only zymotic disease prevalent. One or two cases of typhoid fever were traced to defective sanitary arrangements, and these were at once remedied. The death-rate was satisfactorily low—14·7 per 1,000—the zymotic proportion of this rate being 1·6.

Scarlet fever.

Typhoid.

TAUNTON URBAN (17,767) AND RURAL (19,367).—Although Dr. H. J. Alford's reports for 1888 are the most favourable, as regards mortality, which he has ever been able to compile, they reveal, especially in the rural district, a sanitary condition which is still far from satisfactory. The water supply, pure and abundant in Taunton, is impure in many instances in the surrounding villages, and it is no uncommon thing to find uncemented cesspits and faulty drains close to wells, contaminating what might otherwise be pure water. Dr. Alford is of opinion that in country districts any system of sewerage must be a failure, and, as a rule, prejudicial to health, owing to the want of such necessary factors as properly constructed and thoroughly flushed closets, well laid and ventilated sewers, and proper means for the disposal of the sewage. Even in the town the system calls for improvement, the ventilation being very bad, and the sewerage works inadequate to the demands upon them. The condition of the dwellings has improved; but constant and vigilant inspection is necessary to cope with the continually recurring nuisances, and upon the suppression of which depends the sanitary well-being of the district. There was a comparative freedom from zymotic sickness. The diphtheria and enteric fever cases were most frequently associated with unsanitary surroundings. The general death-rates were 15 and 15·6 respectively.

Water contamination.

Sewerage.

Dwellings.

VENTNOR (Population, 7,000).—Dr. Russell Woodford claims for Ventnor the distinction of having had during 1888 the lowest death-rate (5·7 per 1,000) of any health resort in the United Kingdom. His report certainly testifies to an enviable condition of public health, and an excellent state of sanitation. Of all the zymotic diseases only typhoid fever and erysipelas were accountable for deaths, one from each disease. A few cases of scarlatina occurred, the first being that of a servant who contracted the disease while in attendance on two convalescent children brought down from London. By careful attention to disinfection and isolation the disease was kept in check, and there was no fatal case. The undoubted qualifications of Ventnor as a health resort for consumptives attracted a large number of visitors suffering from that fatal disease. Of those who came to the district during the last year, 37 succumbed to their malady, besides 7 inhabitants who had become residents by virtue of necessity. It is satisfactory to note that the town possesses a pure water supply.

Scarlatina.

Phthisis.

WAVERTREE (Population, 14,300).—Dr. H. Harvey's report for 1888 presents many satisfactory features, the most important being a marked reduction in the death-rate. This was the lowest of any for the past ten years, with the exception of 1879, when it was 13·4 per 1,000, as compared with 14·05 for the year under notice. The absence of any severe epidemic no doubt contributed largely to this result, while there was a markedly diminished mortality among very young children, more especially under the heading of "debility from birth." Dr. Harvey has before suggested a probable connection between this common factor of a large infant mortality and the long continued scarcity of work, with the attendant poverty among the poorer classes, and it is noteworthy that the diminution under this heading was coincident, during 1888, with less pressing poverty and less slackness of work than during the two previous years. Only 20 deaths occurred from zymotic causes, in spite of the wide-spread prevalence of scarlet fever, and the 1 death from measles was in striking contrast to the 26 recorded in 1887. A large amount of useful sanitary work was carried out.

Reduced infant mortality.

Scarlet fever.

SURVEYORS' AND SANITARY INSPECTORS' REPORTS.

BOURNEMOUTH (Population, 32,025).—Mr. W. Geo. Cooper's report for 1888 describes Bournemouth as a thoroughly safe health resort, and the sanitary condition therein set forth, the good general standard of the houses, business premises, lodging-houses, &c., and the means available for dealing with infectious diseases, bear out this assertion. The number of sanitary operations during the year was 1,351, effected in 593 houses. Examination was made into the drainage of 38 villas or large lodging houses, 6 boarding schools and 3 hotels, and the sanitary arrangements in each case have been brought up to the standard required by the bye-laws relating to new streets and buildings.

Good sanitation.

Examination of hotels, &c.

OLDHAM (Population 138,220).—An outbreak of small-pox with which the year 1888 opened, occupied a considerable portion of the time usually devoted to the performance of routine inspection, &c. Nevertheless, the record of sanitary work presented by Mr. Thomas Rushworth was fully up to the average, and many improvements were effected. House-to-house inspection revealed

many serious defects, which otherwise might never have been brought to light. He reports that 1,309 defective and blocked drains were dealt with; 292 slopstone pipes emitting sewer gas into the houses were disconnected, and 307 broken and blocked slopstone pipes repaired. A great deal of time was devoted by the staff to secure that the work done should be thorough, the re-inspection of nuisances and work under notice involving 7,676 visits. The slaughter-house inspections have been remarkably free from complaints as to anything of a suspicious or unsound character, and the quality of the meat exhibited in the markets and the butchers' shops was generally satisfactory. Mr Rushworth had to deal with two outbreaks of contagious diseases in animals, one of pleuro-pneumonia, and one of swine fever. He was also compelled at another place to kill healthy cattle alleged to have been in contact with infected cattle, in the adjoining county division of Ashton.

SMETHWICK (Population 31,000).—Mr. James Asbury's report for 1888 comprises the following: Premises visited, 1,953; foul drains, closets and cesspools creating nuisances, 250; cases of over-crowding, 2; houses cleansed and disinfected, 321; canal boats visited, 169; samples of water obtained for analysis, 31; ashpits emptied, 4,178; closets emptied, 6,578.

STRETFORD (Population, 21,000).—Mr. Thomas Hill's report for 1888 shows that a constant attention has been given to the comparatively minor matters which influence the sanitary condition of a town, but which if neglected are formidable barriers to real sanitary progress. Such are defective house drains, accumulations of refuse and the many items of sanitary routine, all of which were carefully dealt with. Ninety-one cases of infectious disease came under notice, and of these 22 were sent into the Monsall Fever Hospital. The total cost of patients during the year was £142 2s., of which £13 were contributed by "paying patients." Cow-sheds, dairies, &c., and slaughter-houses were regularly visited; the offal from the latter places is removed by the board weekly at a charge of 6d. per occupier. The number of ashpits emptied amounted to 9,295.

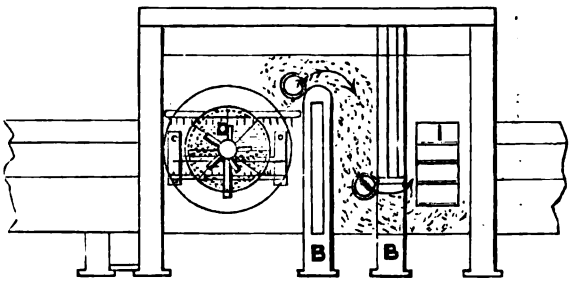
Hospital.

WAVERTREE (Population 14,300).—Mr. Isaac Dixon's report shows that as a result of frequent supervision much useful sanitary work was carried out during 1888. Numerous cases of infectious disease were discovered and reported, 33 houses being thereupon thoroughly disinfected and cleansed, and the infected bedding and clothing removed and stoved or destroyed. The number of ashpits emptied was 3,647, or an average of 304 per month.

ILLUSTRATED SANITARY PATENTS.

11,841. (1888.) IMPROVED METHOD OF DESTROYING THE NOXIOUS FUMES OR GASES ARISING FROM CHEMICAL MANUFACTURES OR PROCESSES. ANDREW NOBLE BERTRAM, Milngavie, Stirlingshire, N.B. [6d.]

This invention, which has more particular reference to condensing and destroying the gases and saturated vapours arising from recovered soda from lyes in paper mills, but may also be applied to chemical works and all trades where noxious fumes are generated, consists in drawing the gases into an air-tight bricked chamber with an arched roof, which may vary in area according to the density and volume of the gases, by means of a rotary fan D. As the gases enter the chamber they are made to pass through a spray of water C, which plays upon the boss and blades of the air propeller; by this means the gases are caused to combine with the water, and to further this combination the brick floor is covered with about 12 inches of water. Crossing at right angles to the air propeller a wall B is built to within about 2 ft. 6 in. of the arched roof. The blast of the air propeller drives the saturated gases against this wall, which is kept cool by a current of air; and in order that the gases which escape being non-condensed may get free, the blast is caused to take its course over the top of the wall, where it is again met by a spray of water under pressure, and its further progress is retarded by another wall, which is built from the roof to within about 2 ft. from the floor. After the gases



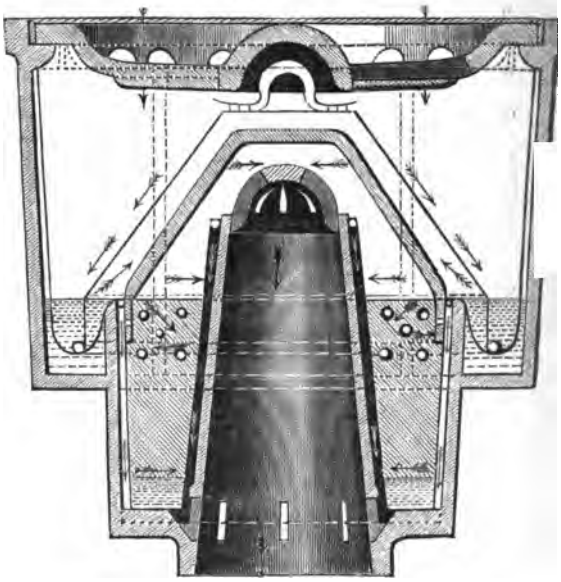
which remain still in vapour have passed under this wall they will finally be subjected to another spray of water before passing up the chimney.

Claim.—The improvement in means, as described, of washing out and removing the noxious smelling vapours and gases liable to be evolved from all chemical manufactures and processes.

11,519. (1888.) STENCH TRAP FOR SEWERS AND SEWAGE PURPOSES. JOHN TAYLOR, 31, Mosley Street, Grimshaw Park, Blackburn, Lancashire. [8d.]

This invention has especial reference to those kind of traps or gully gratings or grids which are employed in conjunction with the drains or sewers of houses, &c.

The stench trap, which will be readily understood from the figure, consists of a cistern-box or receptacle containing a conical-shaped stand-pipe, with a semi-circular grid



or grate on the top. The stand-pipe has eight slots or ports at the bottom, which are cored in, so as to allow the water to drain from the sewage matter when there is no water entering the trap.

A concial-shaped cover stands in the cavity or water-lute, and stops the stench arising from the drains, and also prevents light and heat getting to the lower part of the trap, thereby checking the putrefaction of its contents.

Claim.—The method of the grate, or grid socket, and the said stand-pipe; also the way the said trap is formed.

12,676. (1888.) IMPROVEMENTS IN APPARATUS FOR VENTILATING ROOMS, CHAMBERS, BUILDINGS, SHIPS' CABINS, RAILWAY CARRIAGES, AND THE LIKE. DE FONBLANQUE PENNEFATHER, 13, Rumford Street, Liverpool. [8d.]

This invention relates to a system of ventilating spaces by employing apparatus comprising air collectors, extracting nozzles, liquid spraying devices, and other ingenious parts and arrangements; the said apparatus being adapted to operate and be used upon or above the roof of the building or structure to be ventilated. One great feature of the apparatus is the effective reversibility of the different parts at times of change of wind, or the direction in which the currents of air may be forced by any external agency. Also the extreme adaptability of the general principles of this invention to the necessities of the various classes of buildings, ships, railway trains, or the like that need ventilation. The details of the construction of the above-mentioned apparatus are fully described and illustrated in the published specifications, being of a too voluminous nature to be entered fully upon in these notes.

13,456. (1888.) IMPROVEMENTS IN WATERPROOF AND OTHER GARMENTS. JOSEPH JOHN BYERS, Stewart Building, New York, U.S. [8d.]

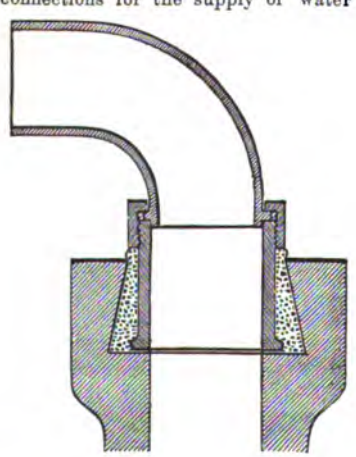
This invention relates to that class of waterproof and other garments which are provided with ventilating means at the shoulders or epaulets, and consists, firstly, of an improved method of forming the air chamber or shoulder form, and, secondly, of means used in connection with the ventilating apertures, for regulating the amount of ventilation in the shoulders of such garments.

A perforated base piece of linen, muslin, silk, or other material is first employed, of sufficient length to reach from the arm-hole of the garment to, or nearly to, the neck, and of sufficient width to cover the shoulder. On to this base piece is fastened the shoulder form proper, which consists of hair-cloth, hair-rubber, or any other elastic stiff material of greater width than the base piece on which it is fastened, so that it is forced to take the form of an arc of a circle, and the two pieces together form a section somewhat similar to that of a truncated cone. To regulate the amount of ventilation a second piece of perforated material is placed over the perforated base, which is capable of being slided to and fro; the perforations of this second piece correspond with those of the base, and when it is moved the amount of air admitted is governed thereby.

Claim.—The contrivance as above described.

15,016. (1888.) IMPROVEMENTS IN OR RELATING TO CONNECTIONS FOR THE SUPPLY OF WATER TO CLOSET APPARATUS. WILLIAM DUNDAS SCOTT-MONCRIEFF, 86, Newman Street, London, W. [6d.]

This invention has for its special object the improvement of connections for the supply of water to closet apparatus, and more especially as regards the connection of the bent union to the earthenware basin and the means of allowing a certain amount of play in fixing water waste preventing cisterns for the supply of same.



The socket of the earthenware basin is constructed with a slight amount of internal convergence towards its external opening as shown in the drawing, leaving a shoulder in such a manner as to allow of the union for the bend to abut against the said shoulder, providing the union with a small projecting collar so that when it is inserted the undercut recess in which it is placed may be run with cement or other suitable material, thus forming a permanent key or bed to keep it in its place. And in order to allow of a certain amount of play in fixing the water waste preventing cistern to the other extremity of the down pipe, the brackets upon which it is carried are provided with slotted holes, thus allowing the cistern to be adjusted to the set of the down pipe.

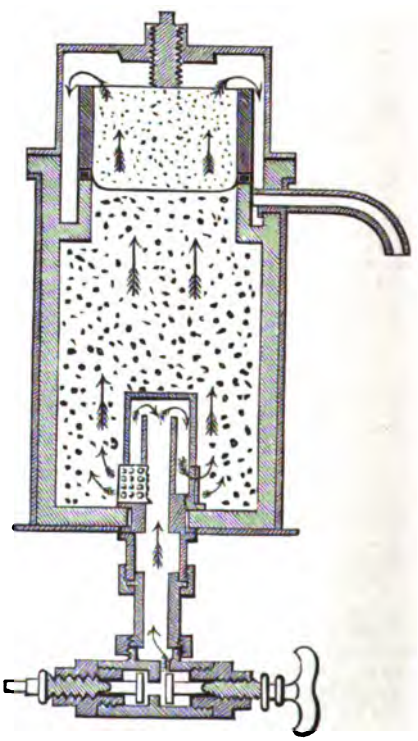
Claim.—The improved mode of fixing unions to closet apparatus as described.

15,969. (1888.) IMPROVEMENTS IN WATER FILTERS. ROBERT GOUGH, 31, Walpole Street, Chelsea. [8d.]

This invention relates to an improvement in water filters attached to the supply-pipe of any domestic establishment, for the purpose of providing a running supply of purified or defecated water.

The invention consists in attaching this said filter either near or above the position of any ordinary bit tap or valve where it is usually situated for the purpose of obtaining water from the supply of a cistern or the main.

The filter is constructed in a cylindrical form of glazed earthenware or of any other material, as shown in drawing, with one or two openings at the bottom, and a flanged



top with lugs, ears, or flanges for the purpose of attaching the cover, which is effected by the use of fly nuts.

The top of the glazed earthenware cylinder has an opening provided a short distance downwards, with a sunk well running round the circumference of the outside of the cylinder, with a flanged collar projecting upwards. A bib piece of metal tube is fixed above the well for the purified water to flow outwards. At the bottom of the

cylinder, situated in the centre, is an opening to connect the supply, and is formed with a flanged bush piece, with a male screw outside, and a leather washer or washers passing through the hole, and a metal cap with perforations screwed on to the bush to hold it in its position. A perforated metal ring slides over the perforations in the aforesaid cap to prevent any of the loose granulated carbon passing down into any of the fittings.

On the inner flange above the well is placed a ring of india-rubber, and a solid block of carbon inserted in an earthenware ring the same size as the flange of the well; and when the outer cover is screwed down, a small plug is also screwed down from the centre of the cover on to the top of the solid block of carbon to secure the carbon in its position.

The filter is charged with granulated or fine carbon up to the top of the flange on the well, and a solid carbon block placed above in the manner as herein described.

The water passes in at the bottom of the filter and through the perforations of the metal cap and ring, working its way through the granulated carbon upwards and percolating through the solid carbon block, and down the outside of the earthenware collar into the well beneath, and out of the overflow or bib tube in a continuous run regulated by the supply at the bottom.

Claim.—The combination of the filter with the supply pipe, and the construction of the filter as described.

LIST OF APPLICATIONS FOR PATENTS
RELATING TO SANITATION.

FROM JULY 29, 1889, TO AUGUST 31, 1889.

[*This List is specially compiled for the* SANITARY RECORD *by Messrs. Rayner & Cassell, Patent Agents, 37, Chancery Lane, Holborn, from whom all further information relating to Patents may be had on application, gratuitously.*]

July 29.—No. 11,984. JAMES JOSEPH SCOTT, Endwell Road, Brockley, Kent. An improved air-exhausting chamber for preserving articles of food liable to taint and putrefaction.

July 31.—No. 12,126. JAMES DUCKETT & ALFRED DUCKETT, 8, Quality Court, London. Improvements in and relating to water-closets.

August 2.—No. 12,303. HENRY JOHN GARBUTT, 37, Chancery Lane, London. An improved portable shower-bath or shampooing douche.

August 6.—No. 12,457. WILLIAM BUNTING, Junr., 1, Queen Victoria Street, London. Improvements in water-closets.

No. 12,459. JOSEPH MULLIGAN & CHARLES SWINDELL, 9 and 10, Southampton Buildings, London. Improvements in chimney or ventilating caps.

No. 12,469. Sir JAMES FARMER, 17, St. Ann's Square, Manchester. Apparatus for cleansing scavengers' pails and like vessels employed for carrying offal, blood, and fæcal matter.

No. 12,483. ROBERT WILLIAM THOMPSON, 237, Jefferson Street, Newcastle-upon-Tyne. Improvements in flushing cisterns for water-closets and similar purposes.

No. 12,489. JAMES HEBBLEWAITE, 64, Barton Arcade, Manchester. An improved india-rubber flesh-brush for toilet and other purposes.

August 9.—No. 12,623. THOMAS SHAW, 4, St. Ann's Square, Manchester. Improvements utilising the waste product from sewage works for building and other purposes.

August 12.—No. 12,682. GEORGE MOORE, 21, Mytholmes Terrace, Haworth, Keighley, Yorkshire. Improvements in the method of supplying water to brushes used for cleansing purposes.

August 13.—No. 12,714. ROBERT LUCAS DOWNTON & JAMES WILLIAM SHEPPARD DOWNTON, 27, Southampton Buildings, London. Improvements in dust collectors.

No. 12,761. WILLIAM PHILLIPS THOMPSON, 6, Lord Street, Liverpool. Improvements in or relating to washing machines. (Bruno Hermann, Hecht, Germany.)

August 14.—No. 12,827. SAMUEL RIGBY, 7, Coronation Street, Blackpool, Lancashire. Improvements in machines for washing purposes.

August 16.—No. 12,942. JOHN HOWIE, 62, Vincent Street, Glasgow. Improvements in or relating to syphon flushing cisterns.

August 21.—No. 13,164. JOHN SELCRAIG, 14, Westmoreland Street, Cornhill, Glasgow. A method of ventilating waterproof garments.

August 22.—No. 13,236. GEORGE ROBINSON & SAMUEL EDWARDS, 8, Quality Court, London. Improvements in ventilating hats, caps, and other coverings for the head.

August 23.—No. 13,291. JAMES HEBBLEWAITE, 64, Barton, Arcade, Manchester. Improvements in ventilating and other waterproof garments.

August 28.—No. 13,590. JOHN WATSON, 26, Douglas Buildings, Marshalsea Road, London. Improvements in the ventilation of waterproof and other garments.

August 29.—No. 13,618. JOSEPH CHARLES LEDO, 8, Vauvert Street, St. Peter Port, Guernsey. An improved ventilator.

No. 13,646. ALFRED SAVILL TOMKINS, 28, Southampton Buildings, London. Improved portable bath.

August 30.—No. 13,700. CHARLES BILLING, 6, Lord Street, Liverpool. A new or improved manufacture of soap.

SPECIFICATIONS PUBLISHED.—1888.

10,342. WINSOR. Turkish bath, &c. 6d.
11,519. TAYLOR. Sewer stench-trap. 8d.
13,703. SWINGLER & AIREY. Dustpan and cinder-sifter. 8d.
12,509. HUCHARD. Portable urinal. 6d.
12,668. TAYLOR. Stench-trap for sewers, &c. 8d.

1889.

7,925. HODGE. Scrubbing floors. 8d.
5,054. KEMP. Testing drains. 6d.
6,123. RAMSBOTTOM. Flushing water-closets. 6d.
7,790. CASSARD. Portable water-closets. 8d.
8,482. DUCKETT & DUCKETT. Water-closets, &c. 6d.
9,628. HOLLAND. Water-closets, &c. 8d.

The above Specifications may be had from Messrs. Rayner & Cassell, Patent Agents, 37, Chancery Lane, at the prices quoted.

NEW INVENTIONS.

SCAFE'S WATERPROOF BOOTS.

MR. SCAFE, 20, Albion Street, Leeds, is the inventor and patentee of a boot of considerable hygienic value known as Scafe's patent leather and rubber combination boot. Next to the uppers is a long leather sole extending from heel to toe, attached to which is a sole of the best vulcanized rubber containing on its under surface a number of rubber studs or discs which pass through holes in the outer leather sole from which they project, as shown in the accompanying illustration, giving a comfortable, elastic, and noiseless tread. The chief recommendation of these boots from a sanitary point of view,

however, rests upon the fact that they are quite impervious to wet and damp, and they are said by more than one medical man to have been found to prevent rheumatic affections due to these causes. Rubber, it is well known, is much less susceptible to both wet and damp than leather, at the same time that it is more durable and comfortable to the feet. The ills attributable to damp feet are legion, and the advantages of having a boot so constructed as to render such a condition well nigh impossible, without being at the same time unduly heavy, are very great. For medical officers of health, a boot which is both noiseless at the bedside of a patient, and proof against the inroads of snow and rain, besides being very durable, has a distinct value.

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POLICE COURT CASES.

SALE OF FOOD AND DRUGS ACT (1875).

Adulterated Milk.

On Friday, August 16, William Abbey, farmer, of Roydon, Essex, was summoned at the Worship Street Police Court for that he, on July 20 last, did unlawfully sell, consign and deliver at the Cambridge Heath Railway Station in this district, milk which was adulterated with 20 per cent. and 22 per cent. of added water. Mr. B. S. Weston, sanitary inspector, prosecuted on behalf of the Bethnal Green Vestry. Mr. Ricketts, solicitor, defended. The inspector deposed that he, on July 20 last, attended at the Cambridge Heath Railway Station and took samples of milk from two churns bearing the name and address of the defendant and consigned by label to Mr. W. W. Burrows, of Cambridge Road. The samples were bottled, sealed and marked in the presence of the consignee, Mr. Burrows, and a witness. The samples were then submitted to the public analyst, whose certificate of analysis produced showed 20 and 22 per cent. of added water respectively. Mr. W. W. Burrows and George Thomas Hall, of No. 178, Cambridge Road, corroborated the inspector's statement as to the sampling of the milk. For the defence Mr. Ricketts called the defendant, who swore that he did not adulterate the milk, and produced two men in his employ, who also swore that the milk was delivered by them pure at Roydon Station, and that the milk must have been adulterated in transit. Mr. Weston submitted that the defendant was responsible for the delivery of the milk in a pure state at Cambridge Heath Station. The magistrate, Mr. Montague Williams, said this was his view of the case. The defendant was then fined £4, with 12s. costs.

At the Aston Police Court, August 2, before Messrs. A. W. Wills and A. Johnson, Thomas Brown, dairyman, Woodland Farm, Wellesdon Road, Handsworth, was summoned at the instance of Benjamin Bolt, inspector under the Food and Drugs Act to the Aston Local Board, for selling adulterated milk. Mr. Ashford (Messrs. Ansell and Ashford) appeared in support of the information, and Mr. Dorsett (barrister) defended. Bolt deposed to purchasing a sample from the defendant on the day in question as he was on his round delivering milk. A portion of the milk had been submitted to the public analyst, who had certified that the sample was adulterated with 10 per cent. of added water. For the defence it was submitted that recently defendant had lost two of his cows, and in consequence of his own supply of milk being insufficient for the supply of his customers, defendant had been compelled to make daily purchases from milk sellers whom he met promiscuously in the streets. On the day in question his supply of milk ran short, and he purchased half a gallon from a man whom he had never seen before. It was from this quantity of milk that Bolt took his sample. Defendant had been convicted of selling adulterated milk on several previous occasions. Mr. Wills said that those people who sold adulterated milk, and thus robbed people who were unable to protect themselves, made such profit that they were perfectly willing to risk being caught now and then, and were well able to pay a fine. The Bench were determined to protect the public in the matter of food adulteration, and as the defendant had been previously fined, apparently without effect, the Bench considered that they would not be doing their duty unless they inflicted a heavy penalty. The defendant would be fined £10 and costs.

At the Stockton Police Court, Frederic A. Graham, chemist and druggist, Mill Lane, was charged with selling adulterated aromatic spirits of ammonia. Mr. E. J. Thomas prosecuted for the urban sanitary authority, and Mr. W. C. Langley defended. On July 29, Mr. Pearson, inspector under the Food and Drugs Act, purchased six ounces of aromatic spirits of ammonia at the defendant's shop, and had a portion of it analysed by Mr. Stock, county analyst, who certified that it was not the drug prescribed by the British Pharmacopœia, which established the standard, it being deficient in ammonia to the extent of 36 per cent. Mr. Langley argued that there had been no adulteration whatever, and that the deficiency of ammonia was due to ordinary evaporation, the spirit being so volatile that every time the bottle was opened there was inevitably evaporation. Mr. John Samuel Linford, F.C.S., and examiner to the Pharmaceutical Society, said the ammonia was supplied to Mr. Graham from the laboratory of Messrs. Lofthouse and Saltney, of Hull, of which he was manager. He had analysed a sample of the ammonia, and found that it was only deficient in spirit to the extent of 28 per cent. Considering the time Mr. Graham had had the ammonia, and its volatile character, 28 per cent. deficiency was only an average deficiency. There had been no adulteration, because it was impossible to adulterate it with anything cheaper than itself. Water would turn it milky, and if they added rectified spirits it would be as dear as the article itself. The defendant also gave evidence. The Clerk (Mr. Faber) advised the Bench that it had been decided in the case of a sample of sal volatile that when it was deficient in spirit the Bench were bound to convict. The Bench fined Mr. Graham 30s., including costs.

MARGARINE ACT (1887).

Heavy Penalty under the Margarine Act.

On July 8, at Leeds Town Hall, before Messrs. W. Firth and Jas. Walker, Jno. Ford, provision dealer, 14, South Row, Kirkgate Market, Leeds, was summoned for having sold as butter one pound of margarine to Inspector Walker in Kirkgate Market. His defence was that a traveller's sample of margarine had been accidentally mixed with Irish butter lumps. A previous conviction for a similar offence having been proved against the defendant, their worships imposed a fine of £10 or two months' imprisonment. The Town Clerk, Sir George Morrison, prosecuted.

At the Leeds Police Court, Henry Horsman, butter merchant, of Kirkgate, Leeds, was summoned before Mr. Bruce for having exposed margarine for sale without the labels attached thereto being plainly visible. Mr. Jolliffe prosecuted. Inspector Walker deposed to visiting the defendant's shop on July 23. He saw there two lots of margarine. There was a margarine label on them, but other labels were also on which obscured it, and only the letters "mar" and "ine" could be seen. Defendant contended that the labels, of which he produced a copy, gave a fair view of the word. Mr. Bruce said that he must teach people common honesty. He characterized this as a dodge to get over the law, and a bold infraction of it. Defendant would be fined £3 and costs.

PUBLIC HEALTH ACT (1875).—Sec. 117.

Diseased Meat Cases. Heavy Penalties.

William Linton Imison, a butcher, who carries on business at 63, Meadow Road, Leeds, was charged before Mr. Bruce at the Leeds Police Court, under the 117th section of the Public Health Act, 1875, with having had in his possession the carcase of a sheep which was unfit for the food of man. Mr. Jolliffe, Deputy-Town Clerk, prosecuted; and Mr. Dunn defended.—Superintendent Newhouse deposed to visiting on July 31 a stable in the rear of the Cardigan Arms Inn, Kirkstall Road, and there finding the carcase of a sheep dressed ready for sale. The meat was very much diseased, and totally unfit for human food. An order was obtained for it to be destroyed. Inspector Robinson said his attention was called to the sheep by the defendant, and witness communicated with Mr. Newhouse. Mr. Dunn, in defence, said he did not contend for a moment that the meat was not diseased. But he did contend that it was not meant for human food. The defendant's version of the matter was that the sheep did not belong to him, but was the property of a farmer, of Kirklington, near

Bedale. The defendant had a field at Roundhay, and he allowed people to put cattle which were travelling into the field for rest, prior to being taken the next day to the market for sale. On July 30 some sheep were being driven from Roundhay to another field at Burley, and on the way one of them died. It was taken into this stable, and the defendant ordered the skin to be taken off and the entrails taken out, and left there until he received instructions from Allcock, the owner. The defendant did not make any attempt to remove the carcase, and himself communicated with the inspector. He (Mr. Dunn) contended that his Worship must not only find that the carcase was in the possession of the defendant, but must also find that it was intended for sale as human food. Mr. Bruce intimated that he believed the defendant was simply taking his chance of the inspector passing the meat when he spoke to him about it. This sort of thing could not be done with impunity. The defendant had been previously fined heavily for having diseased meat in his possession. He would now be fined £10 and the costs.

At the Stockton Police Court, George Wood, butcher, Church Row, was charged with depositing diseased beef for sale on August 2, and with committing a similar offence on August 3. Mr. Thomas prosecuted, and the defendant defended himself. On August 2, Mr. Pearson, inspector to the urban sanitary authority, visited the defendant's slaughter-house, and there found a carcase of beef which had been recently killed. The animal was very emaciated, and had plainly suffered from disease. The lungs and liver were missing, but they were afterwards found in the midden, and they were diseased. Dr. Clegg, borough medical officer, and Mr. T. Elliott, V.S., were called in, and they condemned the carcase as being totally unfit for human food, there being evidences of extensive tubercular disease. Dr. Dale, J.P. (to Mr. Elliott): I should think the cow would be so thin that you could almost see through it? Mr. Elliott: Oh, yes. In the second case, the evidence showed that this animal had suffered from extensive tubercular disease, and was totally unfit for human food. — The defendant addressing the Bench, contended that the carcases were in the slaughter-house for inspection by Mr. Pearson and not for sale unless they passed the inspector. When a butcher had a "plain" animal it was customary to leave it hanging in the slaughter-house till the inspector had examined it. He did not profess to kill first-class animals. He killed poor meat to supply poor people at a poor price. If third-rate meat were not killed for the poor, many people would hardly ever taste flesh meat at all. Poor meat was allowed to be killed and sold in Wolverhampton, Birmingham, and other towns. If this were not allowed, he added, "awd cows wad niver get killed, and the young cows wad hev nowt t' eat." James Davis, slaughterman, stated that he killed the animals, and denied that the lungs of one were concealed in the midden. The lungs of each of the defendant's animals were hung in the slaughter-house. Other people killed in the slaughter-house.—The Bench having decided to convict, previous convictions were put in against the defendant. For having diseased meat in his possession, he was fined £15 in December 1875, sent to gaol for a month in April 1876, and for three months in April 1877, whilst in April 1889 he was fined £5 and costs. He has also had four months' hard labour for fraudulent bankruptcy, and has been convicted of assaults and other offences.—The Bench now committed him to goal for two months with hard labour for each of the present offences, and he was also ordered to pay the costs of the cases, or remain in gaol another month.

Alfred Blackburn, pork butcher, High Street, was charged with depositing diseased pork for sale. Mr. Thomas prosecuted, and Mr. George Barnley, of Middlesbrough, defended. On August 1, Mr. Pearson visited the defendant's slaughter-house, and there found the defendant killing pigs. One had been scalded, and the defendant was in the act of scraping it, but it was alleged that when the inspector entered the slaughter-house the defendant left that particular pig and went to another. The inspector, however, requested him to open the pig he had left, and when that was done a large quantity of water—about three gallons, the inspector said—gushed out. The liver was extracted, and it was found to weigh at least 24 lbs., although its normal weight should have been 3½ lbs. only. It was a dropsical mass. Dr. Clegg and Mr. Elliott examined the carcase and said the animal had suffered from dropsy, which might have been induced by swine fever. The carcase was totally unfit for human food.—Mr. Barnley, for the defence, argued that there was nothing whatever to indicate guilty knowledge on the part of the defendant as to the animal's condition. Indeed, everything pointed in the opposite direction. The animal was bought openly, at the top price. namely, 7s. per stone, and it was killed openly and opened in the presence of the inspector. It was ridiculous. to say the least, on the part of the inspector to say that a five-stone pig contained three gallons or two and a half stones of water. If it contained such an amount of water it would constitute a monstrosity which would strike anyone, whereas the fact was that externally there was nothing to indicate that the animal was diseased. Directly the pig was opened and found to be diseased. the defendant abandoned the intention of selling it.—Witnesses were called to prove that there was nothing externally to show that the animal was diseased.—The Bench said that as this was the first charge which had been made against the defendant they would merely order him to pay the costs of the case, £2 17s., but they warned him that if he offended again he would in all probability share Wood's fate.

NEGLECTING TO COMPLY WITH A CORPORATION ORDER.

Messrs. Whitaker & Son, estate agents, Leeds, were summoned before Mr. Bruce for neglecting to comply with an order of the Corporation to provide water-closets for property in Tomlinson Street and Camp Road. Defendants pleaded guilty, and were fined £4 13s. and costs. Mr. Jolliffe prosecuted.

THE SANITARY INSTITUTE,

74A, MARGARET STREET, W.

EXAMINATION FOR LOCAL SURVEYORS.

PAPER I.

Question 1.—If called upon to devise a scheme for water supply to a population of 30,000 persons what are the points to which you would specially direct your attention?

Answer.—First to ascertaining as nearly as possible the present expenditure and prospective needs.

If the town is entirely sewered, the flow of sewage will give an idea of the expenditure of water, the amount of ground water in sewers being ascertained by observations taken at night when the drains are not in use. To this must be added water used for street watering and for fires, which will, perhaps, not enter the sewers, but flow off by natural channels, and any waste from factories passed into streams, and allowance must be made for the increased expenditure that will take place when dwellings hitherto supplied by wells are given a constant service, and a further allowance for prospective increase of population based upon calculations made from increase between the last and last preceding census, or other mode most applicable.

The ratable value of houses, the number of water-closets and baths in use, the quantity used for manufacturing purposes may all be taken into account in estimating quantity required.

Possible sources of supply will next fall under consideration. What gathering grounds are available, their nature and extent, what they will furnish; which may be estimated by gauging streams, facilities afforded by the nature of the ground for forming storage reservoirs in convenient situations, amount to be deducted from available total to satisfy existing water rights, &c.

What is the geological formation of the district; are there water-bearing strata—if so, at what depth; is the water held by them soft or is it permanently or temporarily hard?

Can an artesian well be formed; if so, what will be the composition and temperature of the water obtained?

In comparing possible supplies of water of different composition, perhaps the leading manufactures may have to be taken into consideration, one water being more suitable for the prin-

cipal industries than another. Comparative cost of alternative pumping and gravitation schemes may need comparison.

Question **2.**—Point out the advantages and disadvantages of the various sources and modes of water supply.

Answer.—Sources of supply may be classified under two main heads.

Surface supply, from brooks, rivers, lakes, or reservoirs, surface-fed springs, and shallow wells.

Supply from deep subterraneous sources, as from springs cropping out at foot of mountain ranges, and having deep-seated sources, from artesian wells, and from other deep wells with or without adits or tunnels to increase supply by tapping water-charged fissures.

All surface supplies will be more or less contaminated by animal and vegetable matter, and, in populous places, from sewage, and by waste from factories. Water collected in reservoirs and mountain lakes from high-lying uncultivated moorland will be the purest of these; next in order, water from springs, and from brooks not polluted by sewage; last and worst come shallow wells.

The softness of surface water is an advantage for cooking, washing, and brewing tea, but disadvantageous from its liability to absorb lead from service pipes. Some moorland water contains acids which attack lead.

Water from deep-seated sources is generally pure and wholesome, and when drawn from the granite, hard sandstone, or oolite, it will be soft. Supplies from the chalk formation will be pure and wholesome but hard, the hardness partially disappearing on boiling. Water drawn from the selenitic rocks is permanently hard and decidedly unwholesome. Gravel and sand beds, and the softer rocks, furnish water of variable quality.

The modes of supply are by gravitation and by pumping. Surface waters are supplied by gravitation, though it may be necessary to pump from a river. Water so supplied will generally require filtering. The first cost of the necessary works is large in proportion to cost of erecting pumping machinery.

Water pumped from deep wells may require to go through a process of softening; no filtering will be needed, and no large storage reservoirs; the working expenses will be considerable, but may not exceed interest on capital outlay of an alternative gravitation scheme.

Modes of distribution may be considered under the heads of modes of supply; these are by constant and by intermittent service. The former should be always preferred, as preventing chances of contamination in the mains and in house cisterns, and for convenience in rapidly extinguishing fires. With good house fittings and proper appliances for detecting and preventing waste and leakage, no more water is expended by the constant than by intermittent service, and sometimes less.

In places by the sea-side salt water may be used with advantage for street watering and for baths, and a scanty or expensive supply of potable water economized thereby.

Question **3.**—Explain, with reference to population, the subjects of gathering ground rainfall and storage.

Answer.—The number of people to be supplied and the number of gallons per head required being known, area of gathering ground required will depend on the following factors. The mean annual rainfall, that is the mean fall in the driest three consecutive years on record, must be ascertained; this will generally be about five-sixths of the average annual rainfall. A portion of the rainfall will be lost by evaporation and absorption. This will be much the same year by year, whatever the total fall, and may be equal to a fall of 10 to 14 inches, the total fall (in England) ranging from 16 to 70 inches, with a mean of 42. (There are one or two exceptional places where the fall is greater.) A further deduction from available rainfall capable of being stored, will have to be made on account of storage to compensate millowners and others having water rights, perhaps to the extent of one-third or one-fourth of available total.

Capacity of storage reservoirs will depend upon area of catchment. With a catchment area large in proportion to population, and with a fairly distributed rainfall, the necessary storage space will be less than in a district where there are long droughts to be provided for, and where the catchment area being small it is essential that loss by escape of water during heavy floods should be minimized by providing large reservoirs.

Average loss by overflow of storm water may be taken at about 10 per cent. of total fall. Average proportion of rainfall available for storage at about six-tenths of the whole.

Reservoirs in rainy districts may contain 120 days' supply; in drier districts 200 days' supply.

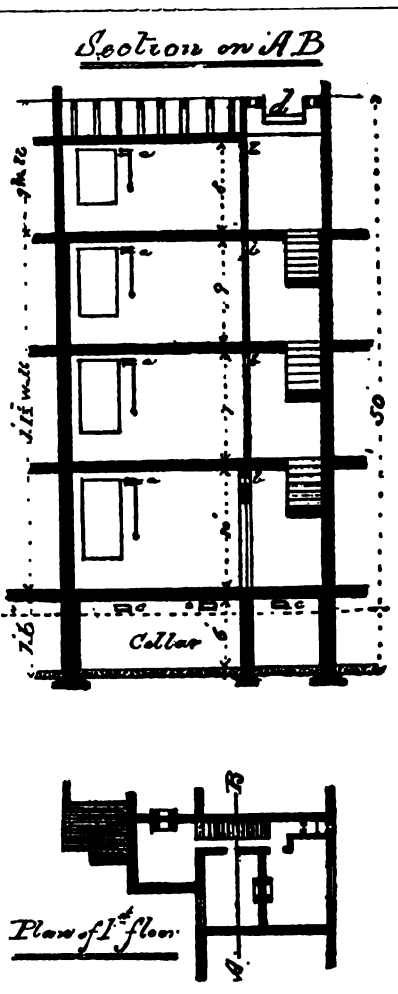
Hawksley's formula for storage is $D = \frac{1000}{F}$.

D being number of days' supply to be stored, F mean annual rainfall (five-sixths of average). Storage capacity may vary from 25,000 to 50,000 cubic feet per acre of catchment area.

Question **4.**—Make a sketch of a house of four stories, showing the minimum height of rooms and thickness of the walls, with the means you would adopt for efficient ventilation of the rooms, numbering twelve in all.

Answer.—In sketch appended, *a a a* represent Sherringham valves, *b b b* wire gauze covered openings over doors, *c c c* grated openings ventilating space under floor joists, and also the cellars; *d* is a skylight made to open.

It is intended that there should be a fire-place in each room, a good large fanlight over street door.



Question **5.**—What is the present state of the law with respect to the occupancy of cellar dwellings?

Answer.—A "cellar dwelling" is defined as a cellar in which any person passes the night.

No such dwelling can be lawfully let or occupied separately as a dwelling, unless so let or occupied at the date of the passing of the Public Health Act of 1875, and the following conditions must also be complied with.

Every part of the cellar dwelling must be at least 7 feet high from floor to ceiling, and at least 3 feet of its height above the surface of the nearest ground or street.

There must be a clear open area along the entire front at least 2 feet 6 inches broad; steps necessary for access to the dwelling must be in every part 6 inches clear from front wall, and both these, and any steps necessary to give access to the house above, must not be over, across, or opposite to the window below referred to. Floor of area at least 6 inches lower than floor of dwelling. The cellar must be effectually drained, the upper part of drain being at least 1 foot below floor.

The dwelling must be provided with a privy or earth or water-closet, and ashpit with proper doors and coverings; it must have a fire-place with proper chimney or flue, and an external window of at least 9 feet area clear of sash-frame, to open as approved by surveyor, except where a back cellar is let with the front, in which case external window must have at least 4 feet area.

Any person letting, occupying, or suffering to be occupied, a cellar dwelling not complying with above conditions is liable, after receipt of written notice from the local authority forbidding occupation, to a fine of 20s. per day.

Where two convictions in respect of the same dwelling have taken place within three months, whether the persons convicted were the same or not, the magistrates may close the dwelling temporarily or permanently.

Question **6.**—What are the principles which should be observed in the construction and cleansing of streets and roads?

Answer.—The surface of streets and roads should be kept dry;

the cross section formed so as to allow rain to drain off at once. Trees should not be allowed to overhang, or the parts shaded by them and receiving their drip will remain wet and muddy.

The breadth of streets should be at least equal to the height of the houses bordering them, and, if possible, greater; there should be no long length without a cross street to facilitate circulation of air.

The best materials for road and street surfaces, from a sanitary point of view, are non-absorbent, easily cleaned, and such as not to cause an excess of mud, by rapidly wearing out, or by allowing mud from below to work up. Asphalte best fulfils these conditions; next, wood paving, stone setts with and without concrete foundation, and asphalte or mortar joints, and, lastly, macadam.

Cleaning should be done frequently. Frequent cleansing diminishes wear, and the oftener it is done the less will be the aggregate quantity of mud to be carted away or otherwise got rid of. In London, and some other great towns, boys, with shovel and brush, remove horse-droppings as they fall.

Watering should be done when it is necessary to lay the dust. In sea-side towns, where sea-water is available, it is used in preference to fresh water; it improves the road, and the surface remains damp longer than with fresh water.

In towns, provision should be made for the speedy removal of snow.

Paper II.

Question 1.—What are the powers and duties of a surveyor to an urban local authority?

Answer.—Duties as follows. To advise the authority on all business concerning his profession, to examine and report upon all plans of new roads and buildings submitted for sanction, and, when sanctioned, to see that they are constructed in accordance with the bye-laws, to take levels and surveys, and to make plans and estimates for new works and buildings required.

To perform the duties and exercise the powers of highway surveyor to his district. To hold charge of sewerage, water supply, sewage, and refuse disposal works (when not under the separate charge of the inspector of nuisances); the arrangements for removal of house refuse and night soil, street lighting, &c.

To report to the authority cases of deficient water supply and defective privy accommodation (houses or factories) and any breach of the laws or bye-laws affecting his department.

To make any reports required under the Artizans' Dwelling Acts.

The surveyor has very large indirect powers in the way of initiating legal proceedings or starting improvements, but can do very little directly. He must take immediate and independent action to prevent damage from dangerous buildings, and for some purposes he may take action without previous report under the building bye-laws.

The duties are very numerous, and the list given above does not purport to be exhaustive.

Question 2.—On what subjects may bye-laws be made by the authority? Give a sketch of bye-laws on any one subject.

Answer.—Cleansing of footways, removal of house refuse and night soil; prevention of nuisances arising from snow, filth, dust and ashes, and from keeping of animals; common lodging-houses; houses let in lodgings; new streets and buildings; markets; slaughter-houses; hackney carriages; public bathing; baths and washhouses; pleasure grounds; horses, &c., for hire; pleasure boats; cemeteries; mortuaries; offensive trades; hop-pickers' and fruit-pickers' lodgings; highways; tram cars; and others.

Also regulations having the force of bye-laws for periodical removal of manure (sec. 50, Public Health Act); connecting drains with sewers (sec. 21, Public Health Act); and with respect to cow-sheds, dairies, and milk-shops, Infectious Diseases (Animals) Act.

The bye-laws in most common use are those relating to new buildings; they are intended to insure, first, that they shall be stable and healthy. To this end it is enjoined that the site shall be clean, and shall be covered with a layer of concrete all over. The materials must be capable of being well bonded together, the mortar good, the lengths, heights, and thicknesses of cross and party walls as laid down must not be exceeded; recesses, chases, and openings are restricted to certain dimensions to prevent weakening of the walls, special provision must be made to support superstructure over large openings.

For prevention of fire, party walls must have no openings, and must be of certain thickness at backs of chimneys and recesses; they must be carried above the roof to form a parapet between the houses they separate; regulations for construction of chimneys and chimney backs, for keeping wood out of walls and at certain distances from chimneys and flues are given. Non-combustible materials must be used for cross and party walls, for gutters and structures on roofs, which latter must also be protected by raised parapets.

Provision is made for making and maintaining free air spaces in front and rear of houses, and for ventilation of rooms by windows of regulated area opening directly upon such spaces, and for ventilation between concrete covering site and the floor joists.

Damp courses and proper footings on firm ground to all walls.

Other clauses provide that the drains shall be of sound and durable material, not less than a certain size, to have proper joints, to be laid in concrete with a proper fall, and to be ventilated by two openings, one as high as possible at one end of the system for an outlet, the other, at low altitude, at the other end for inlet.

All openings (gullies), except for water-closets and slop-sinks, outside the house, the house drains disconnected from sewer, and land drains from sewer or drain.

Further clauses provide that closets within the house shall be so placed and constructed as to be capable of good ventilation, and that all closets shall be so constructed as to prevent nuisance.

Closets, ash-pits, and cesspools outside house to be so situated and constructed as to avoid nuisance or contamination of water.

Provision is made for submission of plans for sanction, for supervision by the surveyor during construction, and for recovery of penalties for breaches of regulations.

Question 3.—Illustrate the principles you would adopt in sewering, with or without the admission of rainfall to the sewers.

Answer.—Rain-water cannot be wholly excluded from sewers. As washings of paved surfaces, streets, &c., aree often as foul as house sewage, as little as possible should be admitted, as no sewer could be constructed to remove the whole, and because a largely varying delivery at outfall increases difficulty of disposal of sewage. Whatever proportion be admitted, the principles guiding construction are for the most part the same.

Size should be sufficient for present and prospective needs, but not larger than necessary, or the velocity of flow on large flat invert will be reduced, unnecessary cost incurred, and difficulties of ventilation increased.

Shape must be adapted to the nature of the flow. Where flow is fairly regular a circular sewer will be best, being cheapest and strongest; where discharge varies greatly, the egg shape is the best form, giving good velocity with a very small stream, and fairly uniform velocity under all conditions.

Gradient should be true and uniform in any given section sufficient to make the sewer self-cleansing, that is to give a velocity of not less than 2 feet 6 inches per second (mean), but not so steep as to cause dangerous scour on the invert. Where the lay of the ground prevents the formation of a proper gradient, and the flow is small, sewage may sometimes be advantageously collected in a chamber fitted with a flushing apparatus, acting automatically, and giving a good flow while it lasts.

Ventilation.—By frequent openings, manholes, and lampholes, eighteen to the mile or more, occasionally a connection may be made with a factory chimney and the draught utilized to draw foul air from the sewer, but this and similar expedients for the same purpose are not so well approved as the practice of having numerous openings and trusting to the natural movements of the air.

Materials.—Strong, tough, and hard, to resist crushing, fracture, and abrasion, non-porous, not of a nature to be injured by chemical action of sewage.

Stoneware pipes up to 18 inches or 24 inches diameter; bricks moulded to radius for larger sizes, with stoneware inverts; concrete has also been used successfully.

Junctions.—House junctions of proper form should be built in while the sewer is being made, and their positions carefully recorded. They should join obliquely, discharging in the direction of the flow of the main stream. All junctions of a smaller with a larger pipe should be made in the upper half diameter of the latter. Sewer junctions in manholes to join with a curve in direction of flow of main stream (never at right angles), greater fall being given to allow for extra friction.

Flushing.—A flush tank (and ventilating manhole) should be provided at head of every branch, and arrangements made to dam up sewage and give a flush at intervals in a long line.

Outfalls should be so situated as to cause no nuisance if discharging on land at a distance from habitations, if into the sea at below low tide mark.

Lining out.—All sewers should be truly set out in right lines from manhole to manhole or lamphole, so as to admit of ready inspection.

Laying of pipes.—Excavations should be made for the flanges of the pipes to rest in so that they may rest on the ground throughout their length, and not be broken by weight of super-incumbent earth on the unsupported centre.

Any cement squeezed up from the joints inside the pipes should be carefully removed; if left, paper, rags, &c., may be arrested and obstructions caused.

Question 4.—Describe the relation existing in a sewer between gradient, volume, velocity, and size.

Answer.—This may be seen from the formula frequently used for calculations of flow in sewers.

$V = 55 \sqrt{H F}$. V being velocity in feet per minute, F fall in feet in two miles, and H the hydraulic mean depth or area of cross section of stream ÷ wetted perimeter being in circular sewers flowing full or half full = diameter ÷ 4,—also in feet.

The velocity varies as the square root of H or F and *vice versa*, in circular sewers with the square roots of their diameters, and the quantities discharged by such sewers vary as the square roots of the fifth powers of their diameters.

Variations in size of streams of other figure of cross section cause variations in velocity proportioned to the square roots of their respective hydraulic mean depths.

Variations in volume (or area of cross section) do not necessarily vary hydraulic mean depth and consequently velocity, the hydraulic mean depth of a circular sewer and its velocity is, as noted above, the same, whether it be flowing full or half full; a V shaped channel (to which form the egg-shaped sewer approximates) would have the same velocity at any depth of stream, for its bed and area preserve the same proportions.

Similar volumes may have varying velocities—the proportion of area to length of bed of a stream three-fourths filling a 6-inch

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pipe will be very different to those of a similar volume forming a broad, shallow stream on the invert of a large sewer.

Question 5.—What points should be specially considered in testing drains and soil pipes? What are the chief points to be attended to in sanitary fittings and in laying pipes for drainage purposes from houses?

Answer.—The drain pipes should be well burnt, well glazed, not less than 4 inch diameter, straight, truly circular in cross section, not chipped, cracked, or with pieces broken off the ends, not porous, equal to standing a pressure of water of head similar to that they may have to resist when laid, without showing leaks. The soil pipe to be of at least 4 inches diameter, of lead for preference; if of iron, to be coated with some approved preservative; pipe to be sound and true in form throughout, with gas-tight joints. Sanitary fittings, as baths, sinks, urinals, and water-closets, should be placed against an outer wall, so that their discharge pipes may traverse as little of the house as possible. A syphon bend-trap, of such form (Hellyer's, or one similar in principle) as not to syphon out, and having means for cleaning, should be placed on the pipe between basin and wall. Dirty water pipes should discharge in convenient places near, but not over, trapped gulleys in the open air; soil pipes and pipes conveying anything filthy should be joined direct into the drain, the junction receiving especial attention; ventilating pipes above soil pipes to end in a safe place above roof, away from window, skylight, or down draught of chimney (no avoidable bends).

Valve or other closets with a large flush should not be placed over other closets on the same pipe, or they may suck the syphon of the lower one dry, unless specially ventilated.

Drain pipes should be laid in a bed of concrete (rarely done) with cement joints; the drains laid in straight lines or easy curves with true gradients, not less than 1 in 40 for a 4-inch, or 1 in 60 for a 6-inch pipe; junctions oblique, joining in direction of flow of stream, every inlet trapped excepting that from water-closet, urinal, and slop-sink for chamber slops.

Field pipes draining site to be trapped off from house drain, cesspool, or sewer.

Drains to be disconnected from sewer by a trap as near the latter as possible, and to be ventilated by an up-cast and down-cast shaft, the one being as near as possible to the trap disconnecting drain from sewer and the other at the opposite end of the system.

Soil pipe ventilator may serve as up-cast if in convenient situation; the upper end must, in any case, discharge in a safe place.

Portions of drains running under house to be laid at a depth equal to their full diameter below floor, to be bedded all round to a thickness of 6 inches with good concrete, and to be ventilated at each end.

Question 6.—What are the various modes that may be adopted for the ultimate disposal of sewage, and what are the advantages and disadvantages of each?

Answer.—*Broad irrigation*, or causing a thin film of raw sewage to flow over a large tract of land under cultivation, so that it may be at once absorbed by the rootlets of growing plants.

With careful attention no nuisance is caused, and a large proportion of such ingredients of the sewage as are capable of serving as plant food are utilized.

Intermittent downward filtration.—Large quantities of crude sewage flow on to a small area of land deeply and closely drained. Some of the impurities are utilized to nourish growing plants, but the greater part are oxidized and broken up into their elementary constituents in passing through the soil. The land is divided into sections, one being in use while the others are at rest and undergoing aeration; produces a good effluent, and causes no nuisance when well managed; there is also a return from produce.

In both above systems there is a difficulty in dealing with the excess of diluted sewage during heavy rains; a combination of both systems partly obviates this. It is difficult sometimes to get land except at a prohibitory price or to get it at all, and sometimes it is impossible to profitably dispose of the produce. Sometimes the land procurable is unsuitable, or can only be rendered suitable at a very heavy expense. Careless management causes nuisance.

Precipitation by chemicals, the purified effluent passing into a river or stream. A great variety of precipitants have been used; perhaps the best known are the lime and A B C systems. It may be generally stated that by adopting a precipitant suitable to the sewage to be operated upon, and by incurring the necessary expense attendant on using enough of it, a good effluent can be produced. In all cases the disposal of the sludge is difficult and expensive. The advocates of the A B C system say that they can sell their prepared sludge at a fair price as manure. Endeavours have been made to produce a salable cement by adding lime, burning, and grinding the sludge; it has been shipped out to sea, given away or sold at a small price, either with or without previous drying or pressing; some has been destroyed in a refuse destructor. In any way it gives trouble and causes expense. The other great drawback of the system is that authorities shirk the expense attendant on efficient treatment.

Passing sewage into the sea or a tidal river, with or without previous treatment by straining, mechanical subsidence in tanks, or partial precipitation by chemicals. An outfall into the sea may, if taken out far enough, and to a point favourable for removal and distribution of the sewage by local currents, be unobjectionable, but it is frequently washed back and causes nuisance about the shore. Sewage passed into a river will generally cause more or less nuisance, varying with the proportion of effluent to river water and the nature and degree of the means of partial purification adopted. Often an effluent, fairly pure just after treatment, undergoes subsequent changes which render it most offensive. Subsidence of the sludge also causes nuisance. The main recommendation of this method of disposal is that it is a cheap one.

Electrolysis.—Sewage is decomposed and precipitated by passing an electric current through it. The system is a new one; it promises to be cheap and effective, but has not yet been fully tried on a large scale.

NOTICES OF MEETINGS.

EXAMINATION IN SANITARY SCIENCE OF THE UNIVERSITY OF CAMBRIDGE.

An Examination in so much of State Medicine as is comprised in the functions of officers of health, will be held at Cambridge on Tuesday October 1, and following days.

Candidates who desire to present themselves for examination in October next, must send in their applications, and transmit the fees, to the Rev. Dr. Luard, Registrary, University of Cambridge, on or before September 26.

LOCAL INTELLIGENCE.

The last quarterly report of the Medical Officer of Health for the Borough of Salford shows that the deaths of 197 persons aged sixty years and upwards were registered within thirteen weeks of the recent quarter. Calculated on the population estimated to be living at that age, these deaths are equal to an annual rate of 82·1 per 1,000, which is more by 3·4 per 1,000 than the average rate in the five previous corresponding years.

The question of the re-appointment of Messrs. J. Gravely, W. H. Gravely, and M. H. H. Vernon, as medical officers, will come before the next meeting of the Horsham Board of Guardians.

A serious epidemic of typhoid fever is said to have broken out in a part of Burnley. On August 27 the medical officer of health reported sixty cases and four deaths. The outbreak is reported to be attributable to the insanitary state of the drainage in the Burnley Lane District.

Diphtheria is said to have broken out with great violence at East Haddon, a village in Northamptonshire. Half the houses of the parish are said to have fever cases, and five deaths occurred in two days. In one room the sanitary inspector found a child dead from diphtheria and another suffering from the complaint, besides two others. A house has been turned into a temporary infectious infirmary; nurses have been sent by the local authority, and the inhabitants are described as almost panic-stricken. The sanitary condition of the place is said to be very bad.

APPOINTMENTS.

Medical Officers of Health.

Bluett, Dr. John, has been re-appointed Medical Officer of Health to the Chesterfield Town Council, at a salary of £100 per annum.

Boobbyer, Mr. P., M.B., M.S.Durham, M.R.C.S.Eng., L.S.A. Lond., has been appointed Medical Officer of Health to the Nottingham Corporation, at a salary of £500 per annum, *vice* Dr. Whitelegge, Medical Officer of Health for the West Riding of Yorkshire.

Craven, R. M., M.B.C.S.Eng., L.R.C.P.Edin., has been appointed Medical Officer of Health to the Kendal District, *vice* C. E. Paget, L.R.C.P.Lond., M.R.C.S.Eng., resigned.

Grindrod, Dr. J. A., has been appointed Medical Officer of Health to the Norden Urban Sanitary Authority.

Hannah, Nathan, L.R.C.P.Edin., L.F.P.S.Glasgow, has been re-appointed Medical Officer of Health to the Ashton-in-Makerfield Urban Sanitary Authority.

Little, Dr., has been appointed Medical Officer of Health to the Nelson Urban Sanitary Authority, at a salary of £40 per annum.

MacGregor, Dr. G. R., has been appointed Medical Officer of Health to the Bingley Urban Sanitary District of the Keighley Union, *vice* Dr. Roberts, resigned.

Maclagan, James McGregor, M.D.Edin., L.R.C.S.Edin., has been re-appointed Medical Officer of Health to the Hexham Rural Sanitary Authority, at a salary of £300 per annum.

Malet, Henry M.B., B.S., M.D.Dublin, has been re-appointed Medical Officer of Health to the Borough of Wolverhampton.

Millar, Dr. A. P., has been appointed Medical Officer of Health to the Nelson Urban Sanitary District of the Burnley Union.

SAWYER, James Albert Frederic, L.K. & Q.C.P.I. & L.R.C.S.I., has been appointed Medical Officer of Health to the Clevedon Urban Sanitary District, at a salary of £30 per annum.

SCOTT, T. Wolesley, L.R.C.P., L.R.C.S.Edin., has been appointed Medical Officer and Public Vaccinator to the Borough of Flint, *vice* Dr. A. W. Hughes, resigned.

SELLS, Mr. C. J., has been appointed Medical Officer to the District of Worplesdon, comprising the Parish of Worplesdon, at a salary of £40 per annum. (Guildford Board of Guardians.)

SOPER, R. W., M.R.C.S., L.S.A., has been re-appointed Medical Officer of Health to the Dartmouth Borough and Port Medical Officer.

THRESH, John C., Doctor of Science, London University, B.M., F.I.C. (Manchester), has been appointed Medical Officer of Health to the Chelmsford and Maldon Rural Sanitary Authorities, at a salary of £600 per annum. There were 51 candidates for the appointment.

WHITELEGGE, B. A., M.D., has been appointed Medical Officer of Health to the West Riding County Council.

WILSON, Mr. George, M.D., has been re-appointed Medical Officer of Health to the Kenilworth Urban Sanitary Authority.

POOR-LAW MEDICAL OFFICERS.

BRENTON, Mr. Wm. H., has been appointed Medical Officer to the Northern District of the Plymouth Incorporation, *vice* Mr. J. G. Eyeley, deceased.

COTES, Mr. Digby F. B., has been appointed Medical Officer and Public Vaccinator to the Teddington District of the Kingston (Surrey) Union.

CRAIK, E., M.B. and C.M.Glasgow, has been appointed Deputy to the Public Vaccinator of the Norton District of the Leek Union.

EXLEY, John, L.K.Q.C.P. and L.M.Ireland, has been appointed Medical Officer of the New Wortley District of the Bramley Union, *vice* Mr. H. Hick, resigned.

GILL, John, L.R.C.P.Lond., M.R.C.S.Eng., has been appointed Medical Officer of the Guilsfield District, Llanfyllin Union.

GREENWOOD, E. Climson, L.R.C.P.Lond., M.R.C.S.Eng., has been appointed Public Vaccinator to the Parish of Marylebone, *vice* W. A. Sumner, deceased.

HAMILTON, Mr. H., has been appointed Clerk to the Guardians of the East Ashford Union, *vice* Mr. H. Creery, resigned.

LUDLOW, Mr. John, has been appointed Inspector of Nuisances to the Reddish Urban Sanitary District of the Stockport Union, *vice* Mr. A. Caldwell.

MACGREGOR, G. R., M.D.Aberdeen, M.B., has been appointed Medical Officer of Health to the Bingley and Keighley Union Districts, *vice* Roberts, resigned.

MCEITCHIE, Dr., has been appointed Medical Officer of Health for the Huntingdon District of the Huntingdon Union, at a salary of £50 per annum, until September 5, 1890.

MANTON, John Albert, M.R.C.S.Eng., L.R.C.P.Lond., has been appointed Medical Officer to the South-East District of the Sheffield Union.

MASKIAN, Dr. B. I., has been appointed Medical Officer to the 10th District of the Chorlton Union, *vice* Dr. Irvin, resigned.

MUIR, W. L., L.R.C.P., L.M.Edin., L.F.P.S.Glas., has been appointed Medical Officer to the Fourth District City Parish of Glasgow.

MURDOCH, Dr. W. H., has been appointed Assistant Medical Officer to the Liverpool Parish Workhouse, *vice* Mr. A. Blackwood, resigned.

OGLESBY, Mr. H. N., has been appointed by the York Board of Guardians Medical Officer to No. 2. District of the York Union.

ORR, Hugh, L.R.C.P., L.R.C.S.Edin., has been re-appointed Medical Officer and Public Vaccinator to the Filey District of the Scarborough Union.

ORR, R., M.D.Glasgow, L.R.C.S.Edin., has been appointed Vaccinator to the Parish of Glasgow.

READ, Harold William Kingcombe, L.R.C.P., L.R.C.S., L.F.P. and S.G., has been appointed Medical Officer and Public Vaccinator to the Towcester Union and District, *vice* Mr. Arthur G. Evans, M.R.C.S.Eng., deceased.

RUSSELL, James, M.B. and C.M.Edin., has been appointed Medical Officer to the Keighly Union Workhouse, and the North Keighley District, *vice* Mr. Francis Wilson, resigned.

SCOTT, Mr. Augustus F., has been appointed Inspector of Nuisances to the Cromer Urban Sanitary District of the Erpingham Union, *vice* Mr. John Newman.

STANDEN, Dr., has been re-appointed Medical Officer of Health to the Mansfield Rural Sanitary Authority for three years.

THOMAS, E. C., M.B., M.S., has been appointed Medical Officer and Public Vaccinator to the Lampeter Union (Llanbyther) District, *vice* J. H. Williams, L.S.A., M.R.C.S., resigned.

THOMSON, Andrew, M.B. and C.M.Edin., has been appointed Medical Officer of the Crigglestone District of the Wakefield Union.

THOMSON, Mr. M. E., has been appointed Medical Officer to the St. Sepulchre District of the Northampton Union, *vice* Mr. G. Cotton, resigned.

WHEELER, Thomas, M.R.C.S., L.S.A., has been re-appointed Medical Officer of Health to the Bexley Union District.

WILLETT, G. G. D., M.R.C.S., L.S.A., has been re-appointed Medical Officer of the Districts of Bitton and Marksbury of the Keynsham Union.

INSPECTORS OF NUISANCES.

ALLSOP, Mr., has been re-elected Inspector of Nuisances to the Mansfield Rural Sanitary Authority.

BRAMHAM, Mr. Wm., has been appointed Inspector of Nuisances to the Clay Lane Urban Sanitary District of the Chesterfield Union, *vice* Mr. J. Blackwall.

DARBY, Mr. Anthony, has been appointed Inspector of Nuisances to the Lathom Urban Sanitary District, Ormskirk Union, *vice* Mr. W. B. Swift, resigned.

DARLINGTON, Mr. Thomas, has been appointed Inspector of Nuisances to the St. Austell Rural Sanitary Authority, *vice* Mr. C. Thorpe, resigned.

DIXON, Mr. Digby J., has been appointed Inspector of Nuisances to the Rural Sanitary District of the Abingdon Union, *vice* Mr. E. Mudd.

LOCKWOOD, Mr. John S., has been appointed Inspector of Nuisances to the Howden Rural Sanitary Authority, *vice* Mr. A. Hind, deceased.

WARTH, Mr. John, has been appointed Inspector of Nuisances to the Chatteris Urban Sanitary District of the North Witchford Union, *vice* Mr. C. J. Bateman, resigned.

PUBLIC ANALYSTS.

HELLON, Mr. Robert, has been appointed Analyst to the Borough of Kendal and the County of Westmoreland, *vice* Mr. J. W. Montgomery, deceased.

HILL, A. B., M.D.Giessen, L.R.C.P., L.M., L.R.C.S.Edin., has been re-appointed Analyst to the Borough of Leamington.

SURVEYORS.

IRVING, Mr. William, has been appointed Surveyor to the Wigton Urban Sanitary Authority.

LAND, Mr. George, has been appointed Surveyor to the Norden Urban Sanitary Authority.

CLERKS.

BOYD, Mr. Edward B., has been appointed Assistant Clerk to the Hackney Union.

CHADFIELD, Mr. T. B., has been appointed Assistant Clerk to the Derby Union, *vice* Mr. A. B. Haywood, resigned.

MILLAR, Mr. Alexander, has been appointed Assistant Clerk to the Belfast Union, at a salary of £80 per annum.

YOUNG, Mr. J., has been appointed Assistant Clerk to the Hackney Union.

RESIGNATIONS.

ANDERSON, Dr. W. H., Medical Officer of Health to the Rural Sanitary District of the Hoxne Union.

BANK, Mr. John, Medical Officer of the Kirkdale District of the West Derby Union.

COMBEN, Mr. J. A., Inspector of Nuisances to the Portland Urban Sanitary District of the Weymouth Union.

ECKLIN, Dr. William, Medical Officer for the Teddington District of the Kingston-on-Thames Union.

EDWARDS, Mr. F., Medical Officer of the Pelham District of the Bishop Stortford Union.

EVANS, Mr. E., Inspector of Nuisances to the Rural Sanitary District of the Llanrwst Union.

HODGKINSON, Mr. F. C., Inspector of Nuisances to the Midgley Urban Sanitary District of the Halifax Union.

HUGHES, Mr. A. W., Medical Officer to the Flint District of the Holywell Union.

POLLARD, Mr. F., Medical Officer of the 7th District of Southmolton Union.

SHAW, Dr. Thomas, Medical Officer of Health to the Hucknall Huthwaite Urban Sanitary District of the Mansfield Union.

SOUTHERN, Mr. John, Medical Officer to the Ludlow District and Workhouse of the Ludlow Union.

TUCK, Mr. H., Medical Officer of the Frees District of the Wem Union.

WILKINSON, Mr. G., Inspector of Nuisances to the Rural Sanitary District of the Swaffham Union.

VACANCIES.

MEDICAL OFFICER OF HEALTH.—The Basford Union Rural Sanitary Authority will at their meeting to be held on October 1, proceed to the election of a Medical Officer of Health for their district, comprising an area of 72,247 acres and a population of 51,000. Salary £400 a year inclusive. The person appointed must not engage in private practice. Applications, with testimonials; to be sent on or before September 26, to C. J. Spencer, Esq., Public Offices, Basford, Nottingham.

MEDICAL OFFICER.—The Houiton Guardians are advertising for a Medical Officer for Clysthydon, at a salary of £45 per annum, in addition to the extra medical and vaccination fees.

MEDICAL OFFICER.—There is a vacancy for the Medical Officership of the Chesterton District of the Wolstanton and Burslem Union.

VACCINATOR AND ASSISTANT RELIEVING OFFICER.—The Guardians of Ossett Union invite applications for the appointment of

Vaccinator and Assistant Relieving Officer. The salary for the joint offices will consist of vaccinating fees (averaging about £29 a year) and £50 a year. Applications to be sent not later than Monday, September 16, to R. L. Williams, Clerk to the Guardians, Grays, Essex.

DISTRICT SURVEYOR.—The Lancashire County Council require three competent persons to act as District Surveyors, to inspect and report upon the construction and repairing of the main roads of the county. Salaries £200 per annum, with such travelling expenses as may be fixed by the Council. Applications, in candidates' own handwriting, stating age (which must not exceed thirty-five) and past experience, and accompanied by not more than three testimonials, to be addressed to the Chairman of the Main Roads Committee, County Offices, Preston, by Sept. 17.—F. C. Halton, Clerk to the County Council, Preston.

INSPECTOR OF NUISANCES.—The County Borough of Hanley require an efficient Inspector of Nuisances (certificated or otherwise) for the above borough (population 60,000, area 1,768 acres). Applications, giving full particulars as to age, qualifications, experience, and salary required, accompanied by not more than three testimonials of recent date, to be sent on or before Tuesday September 17, marked "Nuisance Inspectorship," to Arthur Challinor, Esq., Town Clerk, Town Hall, Hanley.

INSPECTOR OF NUISANCES.—The Linton Rural Sanitary Authority are prepared to receive applications for the office of Inspector of Nuisances for their district. Salary £100 per annum. The person appointed will be required to devote the whole of his time to the duties of the office. Applications with not more than three testimonials of recent date, to be sent in not later than September 17, to Turner Collin, Esq., Clerk to the above Authority, Linton, Cambs.

DEATHS.

FIRTH, Mr. J. F. B., M.P., the recently elected Deputy Chairman of the London County Council.

FLEMING, Dr. A., Medical Officer for the Holbrook District and Workhouse of the Samford Union.

HARTILL, Dr. William Henry, Medical Officer of Health of the Township of Willenhall, a Justice of the Peace, and Certifying Surgeon under the Factory Acts.

JACKSON, Mr. Louis Pilkington, L.R.C.P., L.R.C.S.Edin., of Plymouth, Assistant Physician to the Plymouth Public Dispensary; Certifying Surgeon under the Factories Act, &c.

MONTGOMERY, Mr. J. W., Analyst to the Borough of Kendal and the County of Westmoreland.

SAUNDERS, Dr. G. M. C., Medical Officer to the Clyst Hydon District of St. Thomas Union.

SPRIGHT, Mr. W. W., Inspector of Nuisances to the Rural Sanitary District of the Doncaster Union.

TOZER, Mr. James, Inspector of Nuisances to the Rural Sanitary District of the Crediton Union.

CONTRACTS.

DRAYCOTT (DERBY), AUGUST 5, SEWERAGE WORKS.

FOR sewerage works at Draycott, Derbyshire, consisting of earthenware pipe sewers, iron pipe syphon, laying out a small sewage farm, &c., for the Shardlow Rural Sanitary Authority.

W. H. BADFORD, A.M.I.C.E., Nottingham, Engineer.

Names.	Addresses.	Amounts. £ s. d.
Price, J. F.	Nottingham	2,765 13 0
Hawley, J. & Son ...	Ilkeston	2,392 16 10
Vickers, H.	Nottingham	2,326 0 0
Smart, T.	Nottingham	2,239 18 0
Thumbs, S.	Nottingham	2,185 16 6
Faulks, A.	Loughborough	2,050 0 0
Tomlinson, J.	Derby	1,989 0 0
Todd, G. F.	Derby	1,905 0 0
Keeling, B.	Nottingham	1,850 0 0
*Holmes Bros.	Nottingham (accepted)	1,845 0 0

* Accepted, subject to a deduction of £350 for ashes not intended to be used.

LONDON COUNTY COUNCIL.

THE Asylums Committee of the London County Council are prepared to receive Contracts for the Enlargement of the Lunatic Asylum of the Council at Cane Hill, Coulsdon, Surrey, in accordance with plans prepared by C. H. Howell, of 3, Lancaster Place, Strand, Architect, and approved by the Commissioners in Lunacy and the Home Secretary.

Printed Forms of Tender can be obtained on application to the Clerk of the Asylums Committee at the offices in Spring Gardens.

Tenders must be delivered not later than Sept. 30.

ALFRED SPENCER,
Clerk of the Asylums Com. of the L. C. C.

The Asylums Committee of the London County Council are prepared to receive Tenders for the Erection and Completion of the Superstructure of a Lunatic Asylum at Claybury, Woodford, Essex, for 2,000 patients, in accordance with plans prepared by G. T. Hine, of Nottingham, Architect, and approved by the Commissioners in Lunacy and the Home Secretary.

Printed Forms of Tender can be obtained on application to the Clerk of the Asylums Committee at the offices in Spring Gardens.

Tenders must be delivered not later than September 28.

ALFRED SPENCER,
Clerk of the Asylums Com. of the L. C. C.

CONSTRUCTION OF RESERVOIR.

The Directors of the Staffordshire Potteries Waterworks Co. invite Tenders for the Construction of a Concrete Service Reservoir, to hold about 3,000,000 gallons, at the Hanchurch Hills, Stoke-on-Trent.

Drawings may be seen, and printed copy of the Specifications, &c., obtained, at the office of the Company, Albion Street, Hanley.

Tenders addressed to the Clerk of the Works Committee may be delivered not later than September 23.

G. DAY HARRISON, Engineer.

CONSTRUCTION OF MAIN SEWER.

The Church (Lancashire) Local Board invite Tenders for the construction of a Main Sewer in Market Street, Blackburn Road, and Henry Street, Church.

Plans and Specifications may be seen and Forms of Tender obtained on application to Mr. W. Stirrup, Surveyor to the Board, 2, Commercial Street, Church, to be returned not later than September 21.

CONSTRUCTION OF BRICK SEWERS.

The Royton (Lancashire) Local Board invite Tenders for the construction of about 1,350 lineal yards of brick sewers, 2 ft. diam., and other works in connection therewith.

Drawings and Specifications may be seen and Forms of Tender obtained at the offices of Mr. R. Vawser, C.E., 17, Cooper Street, Manchester, to be delivered at the Town Hall, Royton, not later than Septemper 23.

TO SEWER CONTRACTORS.

The Local Board of Teddington invite Tenders for the undermentioned Sewerage Works within their district:—

Contract No. 1.—For the construction of about 12 miles of stoneware pipe sewers, with manhole shafts, lamphole shafts, flushing chambers and chamber to contain stone ejector, &c. &c.

Contract No. 2.—For the construction and erection of Sewage Disposal Works, consisting of receiving chamber, pump chamber, chemical rooms, sludge pressing rooms, boiler house, machinery room, &c. &c.

Drawings and Specifications, with conditions of contract, can be seen on application to the Engineer, Mr. H. York (Surveyor to the Board), at his office, Town Hall, Teddington.

Tenders to be delivered by Monday, September 16, addressed to the Clerk to the Local Board, Town Hall, Teddington.

H. E. PRALL, Clerk.

PUBLIC UNDERGROUND CONVENIENCE.

The Vestry of the Parish of Paddington solicit Tenders for erecting and completing a Public Underground Convenience at the south-east corner of Paddington Green, with works incidental thereto.

Sealed Tenders to be directed "To the Vestry," and left at the Vestry Hall, Harrow Road, before 3 o'clock on Monday, September 16. Persons tendering are to be in attendance on Tuesday morning, September 17, at half-past nine o'clock.

Specifications and Plans may be seen, and Forms of Tender, with bills of quantities, may be obtained from the Surveyor, or at the Vestry Hall aforesaid.

FRANK DETHRIDGE, Vestry Clerk.

NOTES AND QUERIES.

Having for some time back been in the receipt of Queries appertaining strictly to sanitary work, and which it would be easy to answer without having to refer our correspondents to competent professional advisers, we have opened a column in which to register such Queries and Replies thereto as can fairly be expected from us; and our subscribers and readers are invited to make such use of this column as will tend to benefit themselves and the community. Both Queries and Replies will, however, be subjected, if unnecessarily long, to a strict curtailment.

MEDICAL OFFICER OF HEALTH.

As medical officer of health for rural and urban districts, combined population 13,761, is it necessary to have a licence in sanitary science to be re-elected?

[As the total population of the district is less than 50,000 a diploma in sanitary science is not absolutely necessary. (*See* section 18 of the Local Government Act, 1888.)—ED.]

Name books you advise to be read for such licence.

[Some very good lists of books are given in the *British Medical Journal* for September 7, 1889 (Educational Number).—ED.]

A death registered as heart disease, chronic nephritis, and convulsions: Under which heading should it be placed in the L. G. B. Schedule?—SUBSCRIBER.

[We understand that, for the purposes of the Local Government Board, it would be sufficient to enter the death in question under the heading "Heart Disease."—ED.]

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REPORT OF THE PROCEEDINGS OF THE ELEVENTH CONGRESS OF THE SANITARY INSTITUTE OF GREAT BRITAIN.

The eleventh congress of the Sanitary Institute was opened at Worcester on September 27.

The Mayor (Mr. Ernest Day) received the visitors at the Guildhall, where a luncheon afterwards took place. There were present the Mayor, who presided, Earl Beauchamp, Lord Norton, the Dean of Worcester, the Hon. and Rev. H. Douglas, Sir E. Lechmere, M.P., Mr. G. W. Hastings, M.P. (president of the congress), and others.

The Mayor, having welcomed the visitors to the "Faithful City," proposed the usual loyal toasts.

Earl Beauchamp gave the toast "Success to the Sanitary Institute."

Mr. Hastings, in responding, pointed out how the proceedings at such associations as these had been followed by fruitful results. He said the sanitary laws could be much better enforced by resorting to the measures which they already possessed than by seeking new legislation.

In the evening there was a meeting at the Guildhall for the purpose of hearing the president's address.

Presidential Address.

Mr. G. W. Hastings, M.P., in the course of some introductory remarks, expressed his regret at the absence of Sir Edwin Chadwick, who might be considered the father of sanitary science in this country, and who, having arrived at the patriarchal age of 90, had found it impossible to undertake the journey to Worcester. He then proceeded to point out that there were many different influences bearing on public health, such, for instance, as that of the sanitary condition of our houses and habitations. He urged the necessity of proper appliances for the disposal of sewage, and was strongly in favour of placing the liquid sewage directly on the land. He instanced Reading as a town which, by means of a well-adapted sewage farm, disposed of the whole of its refuse without further trouble, and with the advantage of insuring an abundant milk supply to its inhabitants. In connection with this subject he spoke of the necessity for looking after the construction of drains and sewers, and all the appliances connected therewith, and of the excellent work which was being done by the Plumbers' Company in London by training and registering skilled workmen for the purpose. Speaking with regard to ventilation, he called attention to an exhibit in the Sanitary Exhibition in Worcester of a reversible window, which would greatly facilitate ventilation and the cleaning of both sides from the interior. It thus answered its ventilating purpose, and did away with the present danger to life and limb. Another leading influence on health was that of occupation. There were only too many trades in this country which tended to produce disease, or to shorten the length of life. Their beautiful porcelain manufacture in Worcester still occasioned, in some instances, danger to the health of those engaged in it; but he was glad to say that a great deal had been done, especially in the improved size and ventilation of the rooms, which greatly lessened ill-health. Inventors were continually at work in various occupations, not only to improve productions, but also to improve health. One of the most remarkable of these of late was the new machine for bottle-making, which was now successfully at work. Under the old plan of making bottles by blowing, the throat and lungs of the workmen had been so much affected that their lives extended to not much more than 30 years' duration; but with the new machine all blowing was done away with, and, as he had pointed out at Newcastle in a discussion in the mechanical section of the British Association, there was no reason why the longevity of bottle-makers should not equal that of any other artizan. It was the duty of the community, as well as of all employers, to endeavour to remove the causes of unhealthiness in our industries. The general principles of sanitation would improve our drainage and remove other general causes of disease; but this would be to a great extent nugatory if industrial occupations were allowed to remain insanitary. Under the head of the influence of food on health, Mr. Hastings proceeded to point out that the recent Local Government Act would give to county councils new powers for the prevention of the pollution of rivers and streams; and he trusted that these would be widely made use of in the county of Worcester, and in the kingdom generally. His own county council had approached neighbouring counties, through which the rivers Severn and Teme flowed, in the hope that a conjoint board might be formed under the provisions of the Act to secure the purity of those rivers; but he grieved to say that up to the present time these negotiations had been fruitless. It was useless to a great extent for one county to attempt to purify its streams if these were polluted by the neglect of the community above, and he earnestly hoped that Shropshire, Herefordshire, and Montgomeryshire might be induced to join in a common effort for the conservation of the water supply in two noble rivers. On the question of milk the president pointed out the dangers that arose from a want of control over the management of dairies He instanced two outbreaks of scarlet fever which had resulted from the use of milk supplied from infected cows, the one at Hendon, and the other at South Kensington. He was aware that the origin of the attack was still to some extent the subject of controversy, but he felt bound to express his own strong opinion that the evidence in the Hendon case went to prove that scarlet fever could be produced in human beings through the agency of milk by a disease in cows, appearing slight in its nature, and not differing much from the ordinary vaccine disease which was a prophylactic against small-pox. This showed the necessity for strict supervision over dairies. It was necessary to arm municipal authorities with extended powers in this respect, and, as chairman of the Police and Sanitary Committee of the House of Commons, he had framed and had introduced session by session into a number of local Bills clauses enabling corporations to deal not only with dairies within their own boundaries, but also with dairies outside their jurisdiction wherever these supplied milk within their borough. He advised that these exceptional provisions should be made universal. He also expressed his satisfaction at the enactment in the last session of Parliament of a measure for the notification of infectious diseases. He had now for seven Parliamentary sessions seen provisions of this nature inserted by the committee to which he had referred in a number of local Bills, until no less than 4,500,000 of population had been subject to them. In no single case, so far as he was aware, had there been any complaint of the system. It had had an immense effect in diminishing the spread of zymotic disease by enabling medical officers of health to hear of the first outbreak, and to take prompt measures for its suppression. Infectious disease was much like a fire, which a bucket of water would put out at the beginning, but with which a fire engine might be impotent if the fire had half an hour's start. No doubt some portion of the medical profession had raised objections to the measures; but the example of Edinburgh, a city in which the profession were remarkably influential and distinguished, showed that no real injury was done to them by notification. The system there, after years of trial, had been thoroughly approved by the profession. Notification has now, by a recent Act, been made compulsory in the metropolis. It now, therefore, extended over more than 8,000,000 of population; and what was good for so large a proportion of the people, must surely be good for the whole. It was to be hoped that the sanitary authorities both in town and country, would see the expediency of adopting, by every means which the Act provided, this easy and efficacious preventative against the spread of disease. In conclusion, he spoke of the interest taken by the people of Worcester in sanitary matters. It was, therefore, hardly necessary to urge on them the importance of sanitation.

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SECTION I.

SANITARY SCIENCE AND PREVENTIVE MEDICINE.

The PRESIDENT (Dr. WILSON) delivered an address on

THE POLICY OF PREVENTION IN SOME OF ITS SOCIAL AND SANITARY ASPECTS.

He glanced at the long roll of diseased conditions and premature deaths which depended upon the laws of heredity—hereditary consumption, scrofula, gout, syphilis, cancer; hereditary insanity and nervous ailments; hereditary criminality; hereditary intemperance; hereditary vagrancy—and considered the multitudes of maimed and doomed offspring which resulted from other unsuitable or imprudent marriages apart from those of diseased or unhealthy parentage. Without discussing over-population theories, he said it was evident that when a man married, no matter what his age might be, at a time when he could barely earn his own subsistence, and when he had no other resources to look forward to, he ran the risk of begetting a family which he could not rear without the aid of pauper relief. The consequence was that that unthriftiness in marriage prevailing among the ignorant and degenerate led too often to intentional neglect of the children amounting to culpable homicide. It largely accounted for that inhuman form of false thrift which, under the name of infant life insurance, was spreading its baneful influence even into innocent village communities, and not only tempted to neglect, but too often sealed the doom of the hapless offspring. But public feeling was gradually being aroused to the enormity of that insidious onslaught on infant life, and there were at last hopes of effective legislative interference. Diseases resulting from impurities in air and water, unwholesome or insufficient food, and zymotic contagions still contributed largely to ordinary medical practice, but year by year they were becoming less prevalent, and all along the victims had been most numerous among persons receiving pauper relief, or among those entitled to the benefits of clubs or dispensaries. While preventive medicine, whether in its social or legislative aspects, owed all its success to medical research, the teaching of it was practically ignored in most medical schools, and the practice of it was detrimental to the pecuniary interests of the profession. To speak plainly, there was no disguising the fact that so long as the family medical practitioner continued to be paid to attend only on people when they were ill, and not to conserve the health of the household, there would be a constant drag on public health progress. He earned his living by disease, and so far as he prevented it he was placed in the unfortunate position of being out of pocket. He was, therefore, exposed to the temptation—a temptation which was happily scorned by the profession generally—that, when called upon to treat cases of preventible disease, whether social, sanitary, or communicable, he need give no warning, nor insist upon any precautions. He did not blame. The fault lay in a system of practice which depended upon the regrettable fact that, in spite of advancing knowledge, public credulity in the power of cure still reigned paramount, while public faith in prevention was practically dormant. There were few medical practitioners who would have the courage when called upon to attend a case of illness in which a change of regimen was alone required and medicine useless to order the regimen and omit to prescribe the medicine. Whether he required it or not, the average patient must have medicine in some shape or form, or he believed he was badly treated. All that was required to bring about the change was that the ordinary medical attendant should be paid by an annual stipend or retaining fee, and not according to the number of visits which he might deem it necessary to make during illness. That system was largely followed in India and other places abroad, and no difficulty was experienced in settling what should be the annual fee for professional services rendered in that way. It was true that in this country the same kind of practice prevailed to a certain extent. For example, the proprietors of mines and other large works paid medical men so much a year to attend on their workpeople, while members of sick clubs, friendly societies, provident dispensaries, and paupers were also attended in that way; but the misfortune was that the great majority of those appointments were scandalously underpaid, because they were regarded by medical men as stepping-stones to general practice. As regarded the advantages of the system of medical providence, or health assurance as it had been called, from a preventive point of view, he said the medical attendant would inquire into the health history of the household, so that he might take precautions against inherited tendencies, or warn against bad habits, errors in diet and clothing, and the numerous risks to health which were common in daily life. He would interest himself in the sanitary condition of the home and its surroundings, so that any defects might be inquired into and remedied. He would make it his duty to call from time to time without being sent for to see how the different members of the household were going on, and would thus have the opportunity of sometimes detecting ailments in the bud, so to speak, which, if not attended to at once, might lead to serious illnesses; and he would take every precaution in cases of infectious disease, and would have no scruples in giving timely warning to the sanitary officials for the protection of the public health. Turning to the sanitary aspect as illustrated in the domain of public hygiene or state medicine, he said that in that direction the policy of prevention had been attended by the most gratifying results, and year by year became fuller of hope and promise. The studies, notably, of M. Pasteur had opened up fields of research of the greatest promise. He, along with Koch in Germany and Klein in this country, supported by a large following of earnest investigators, had gone far to prove that what had hitherto been called "the germ theory of disease" was rapidly approaching a positive demonstration. Experimental work on animals had recently raised issues of immense importance, and more especially in respect to the propagation of certain diseases of animals to man. For example, the experiments with the bacillus of tubercle—the characteristic micro-organism of that most fatal disease, consumption—opened up questions of the gravest kind in respect to our milk supplies, and, in no small degree, to our consumption of butcher-meat. It was well known that tuberculosis, or consumption, prevailed to a very large extent in crowded dairies, that milk from tuberculous cows was largely consumed, and that the flesh of many of the animals when slaughtered was eaten as human food. Now, it had been proved by microscopic research, that the micro-organisms characteristic of that disease could be detected in the milk of the animals so affected, and in their flesh. It had further been proved that animals fed on tuberculous flesh speedily contracted the disease, and there were strong presumptive grounds opened up by other experiments for believing that animals fed on tuberculous milk became likewise infected. Then, again, there had recently been raised the grave question whether cows did or did not suffer from a disease which was identical with the scarlatina or scarlet fever of the human subject, and whether that disease might not be communicable by the infection of a specific micro-organism. Dr. Klein's experiments certainly favoured that view, though the evidence could not be said to be conclusive. In regard to the dangers attaching to our milk supplies, it had been proved, he said, that whether or not there was a cow disease which was communicable as scarlatina to man, there had been several outbreaks of diphtheritic sore throat which had been clearly traced to some diseased condition of the cow, probably affecting the udder or teats. In numerous outbreaks of scarlatina, milk had been the medium in which the contagion of the disease had been distributed, and in many outbreaks of typhoid fever the disease had been propagated by washing out the milk-cans or diluting the milk with sewage-polluted water, or water tainted by the specific typhoid contagium. The danger which lurked in our milk supplies had been so clearly established by numerous in-

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quiries into special outbreaks of disease that many maintained that the only safe preventive measure was always to boil the milk as soon as received into the household. The causes of preventible diseases had been grouped into two great classes—namely, local conditions of filth and nuisance, polluting air and water, and reckless dissemination of contagion. As regarded both those wide fields of disease causation, large powers had been conferred on sanitary authorities, and obligations expressly imposed on them to remove the former and to see that means of isolation and other protective checks were fully and fairly carried out in respect to the latter. Statistical returns showed that the lowering of the general death-rate had been steady and continuous ever since the passing of the Public Health Act, 1872, when it might be said the administrative machinery of sanitation was first set in motion throughout the country by the establishment of urban and rural sanitary authorities and the appointment of sanitary officials. Thus the average death-rate of the country during the five years ended 1870 was 22·4 per 1,000 of the population; during the five years ended 1875 it was 20·9; during the five years ended 1880 it was 20·0; during the five years ended 1885 it was 19·3; while the average during the last three years had been still further reduced to 18·7 per 1,000. That reduction from the average of 22·4 per 1,000 during the five years ended 1870 to the average of 18·7 during the past three years represented an annual saving of 95,000 lives. Or, again, if they compared the average death-rate from the seven principal zymotic diseases for the same periods, the reduction in round numbers represented an annual saving of 30,000 lives. All that was very gratifying, but it was when comparison was made between the death-audits of districts in which the Sanitary Acts were intelligently and conscientiously carried out and those of districts in which they were still practically ignored that they could appreciate still more fully the enormous saving of life and prevention of human suffering which yet awaited improved sanitation. He referred to many sanitary improvements which were still required, especially in the rural districts, which he hoped would be effected by the county councils, particularly alluding to better sanitary inspection and the public control of diseases which depended on reckless dissemination of contagion; and said the principles on which effective prevention must be based were timely information as regarded all cases of dangerous infectious disease, and prompt isolation, either at the home of the patient, when that was possible, or in hospitals set apart for the purpose. Moreover, such notification should be made compulsory by law, and the law should be enforced throughout the entire country, and not be of the permissive character of the Act recently introduced by the President of the Local Government Board, leaving it open to sanitary authorities to adopt it or not, as they chose. No doubt all towns of any size would adopt it, but he feared that the great majority of small urban and rural sanitary authorities would decline to have anything to do with any Act of the kind so long as it was permissive. He thought the system of dual notification by householders and medical attendants was the best, but with the qualification that the medical attendant should be held responsible for immediately reporting all cases upon which he was called to attend, and that the householder should also be held responsible if he failed to report, even though he considered the case so mild as not to require medical assistance, or if through neglect to call in medical advice it could be proved that he had incurred the risk of spreading disease.

Mr. F. H. HOLLINSHEAD (Selly Oak), the president of the Birmingham and Midland Counties Branch of the Society of Medical Officers of Health, proposed a vote of thanks to Dr. Wilson for his address.

Dr. AGAR (Henley-in-Arden), president of the Birmingham and Midland Branch of the British Medical Association, seconded the resolution, which was supported by the President of the Congress (Mr. G. W. Hastings, M.P.), who alluded to the importance of boiling milk as a means for destroying infection. In India, he said, milk was invariably boiled, and it was a remarkable fact that in that country scarlet fever was unknown.

The resolution was carried unanimously.

Dr. W. STRANGE, medical officer of health, read a paper on

RESULTS OF FIFTEEN YEARS' SANITATION IN THE CITY OF WORCESTER,

of which the following is an abstract:—

The population of the city in 1881 was 33,201, and now, with an enlarged area, about 43,000. Worcester was an old walled city, and therefore compressed within narrow limits. Its poorer population was crowded in narrow courts and alleys, with little light and fresh air and plenty of dirt and filth. The sanitary condition of large parts of the city, twenty years ago, was about as bad as it could be. At the time of the passing of the Act of 1866 Worcester was threatened with an epidemic of cholera, and a vigilance committee, appointed to examine the real state of the city, reported to the Town Council that they had made a house-to-house inspection, and had discovered and reported over 1,000 nuisances of all kinds. Epidemics of zymotic disease were frequent, and they were intensified, if not caused by accumulations of filth and the use of polluted water. The committee further said that typhoid fever was endemic in Worcester, and clearly caused by foul drains and privies and the use of polluted well-water. The death-rate at that time ranged from 26 to 27 per 1,000, and at the time he took office in 1873 it was 25·5. After his appointment a house-to-house survey was made, and notice taken of the numbers living in each house, the numbers living in courts and alleys, the condition of the dwellings, the drainage, water supply, the soil, paving, &c., of streets and courts, privies, cesspits, &c. As the outcome of his inquiry, he made a number of recommendations for the improvement of the sanitary condition of the city. Since then many evils had been remedied, and an unwholesome and dirty town made clean, healthy, and pleasant to live in by the enforcement of the law, and by vigilant and active sanitary officers. The prime necessities for health were a plentiful supply of good water and proper and efficient drainage. Their supply of water had been for many years constant and abundant. It was filtered, and every house was, or might be, supplied with it. Their main drainage was carried into every street; every house, with few exceptions, was drained, and flushing tanks had been placed wherever required. The greatest benefit could be traced to that extension of flushing of the drains, and he pleaded for adequate flushing of the house-drains on the part of householders as a prevention of disease. The infectious hospital was a great advantage, and it had become so popular that there was little difficulty in securing a notification of infectious disease. Their success in dealing with typhoid fever was especially marked, and during the last three years no death from typhoid had occurred in the hospital with the exception of two infants, who were beyond recovery when admitted. The present condition of the city offered a striking contrast to the year 1866 or 1872. In the latter year the death-rate was 25·5, and last year it was only 18·74, or a reduction of nearly 7 per 1,000 on a population of 43,000—a saving of 300 lives per annum. This year up to date the rate was only 14. But of more consequence than the death-rate (which was still kept too high by the abnormal deaths of infants) was the improvement in the general health of the population. There was now no fear of an epidemic of scarlet fever in Worcester; typhoid fever had been reduced in severity to a minimum; rheumatism, once a famous complaint in Worcester, was much more rare; small-pox was unknown in the city, and other cases of disease had greatly declined in severity. There was a time when infantile diarrhœa in summer was formidable, but now it rarely gave any trouble. The most unsatisfactory thing about the death-rate now was the great mortality among infants under one year of age. Apart from that, which caused them much anxiety to find a remedy, he thought the city might be congratulated on the great strides it had made in true sanitary work.

Dr. CARPENTER (Croydon) said it was the duty of England to see that the whole of the refuse should be restored to the land from which it had been taken. Any destruction of the materials that entered the sewage was a mistake in political economy. If they did not restore it to the land they deprived the land of a certain portion of its fertility, and they failed in their duty. In regard to sewering, he said that until people were compelled by law to lay down sewers in concrete they would never get rid of the sanitary difficulties which beset them in the construction of house-drains.

The Mayor of WORCESTER (Alderman DAY) said the Corporation would be indebted to anyone who would give them advice as to the best means of disposing of their sewage. At present they thought the precipitation method was the best.

THE SANITARY ASPECTS OF THE POTTERY MANUFACTURE.

Dr. J. T. ARLIDGE (Stoke-on-Trent) read a paper on the above subject. He remarked that the manufacture of pottery was distinctly of an insanitary nature, by reason of its dust-producing conditions, the use of molten lead for the making of glaze, and the risk arising from the use of flint. At the same time, the heat necessary to the manufacture favoured the development, and, by rarefying the air, also the inhalation of dust. Some of the working appliances of a pottery were likewise not without possible ill effect on the health of the artizans, and the attitude of workmen engaged in throwing and pressing tended to produce a narrow chest and uneven shoulders. Of all the causes of illness to be discovered, however, dust from the clay stood pre-eminent, and happily that was one that could be overcome to a great extent by those means of ventilation and extraction which modern mechanical science had brought to such great perfection. There had been vast changes for the better during the last twenty years and upwards—factory laws had been enforced, child labour had been greatly curtailed, work rendered much more regular, and that at night practically abolished; numerous new factories, well built and roomy, had taken the place of dilapidated, damp, and confined structures; machinery had been introduced, reducing materially the number of unskilled hands employed, facilitating work, and giving it greater development; means of ventilation by fans, and other contrivances had been adopted in most factories where there was steam-power, with a consequent enormous reduction of the most active cause of illness—the inhalation of dust; and, as might be anticipated, improvements in the mechanical and general sanitary conditions of their labour had been accompanied by a perceptible material and moral advancement of the employed. There was, nevertheless, ample score for more; and ever onward progress might surely be looked for in proportion as more correct notions of sanitation extended themselves among all classes, as the ingenuity of mechanicians improved the appliances of labour, and invented means for lessening evils attached to it, and as education spread and succeeded, instructing artizans in their true interests, both in respect to morals and to health.

Mr. G. H. FOSBROKE (Stratford-on-Avon) called attention to a danger which arose after the pottery had been sent out. An outbreak of lead-poisoning which he had in his district some time ago was traced by him to the fact of home-made wines having been made in pans badly glazed and improperly burnt.

Dr. ARLIDGE said it had been observed as a fact that persons using articles which had been made in those glazed vessels had suffered from lead-poisoning. The glaze was a composition of lead and glass, lead being the chief ingredient. The glaze was acted upon by acids and strong salts, and it might be removed from saucers or plates by the application of acids.

Mr. WILLIAM E. A. AXON, sent the following paper on

THE TRANSMISSION BY FLESH FOODS OF DISEASES FROM ANIMALS TO MAN.

There has of recent years been an active Vegetarian propaganda in this country, and a greatly increased number of persons have adopted that system of dietetics, and many more, whilst not wholly vegetarian, are so to a very large extent. Vegetarians have always contended that, however healthy in a natural state, yet, under the conditions in which animals are bred and brought to the meat market, their flesh must necessarily in many cases be diseased, and become a source of disease to the consumers; and the present trend of medical and sanitary science is in the direction of the position so taken. The recent decision in the Glasgow Sheriff's Court, by which tuberculous animals are judicially declared to be "unfit for human food," is a striking justification of the vegetarian position, and may well prove to be the beginning of a new era in the history of sanitary science.

Flesh-meat may become a source of disease in several distinct ways. There may be an injurious influence resulting from the decomposition of the animal tissues after death, or they may have been affected by poisonous substances taken into the system during the animal's lifetime, or be tainted by parasitic or other diseases. There are numerous cases on record of death or illness from all these causes, but obviously the last is the most important to be considered in relation to the food supply of the nation.

There is no room to doubt the communicability of disease from the flesh eaten to the flesh eater. Oxen, pigs, sheep, hares, deer, &c., are liable to become infested with tapeworm by swallowing the ova in their food. These eggs are hatched in the intestinal canals, and the young worms pierce the mucous membrane and the walls of the intestines, and so pass into the tissue, where they are surrounded by a sort of bladder. When eaten by man, these cysticerci have a further development, and are transformed in the human alimentary canal into the fully-matured tapeworm. One frequently fatal disease, hydatids, arises from the injection into the human system of the *tenia echinococcus*, the ova of the tapeworm. That which is called measles in the pig is neither more nor less than the cysticerci bursting from their envelopment. The bladder worms infect calves, but the creatures do not survive when their hosts have reached the adult stage, and many thousand pieces of beef have been examined without a cysticercus being found. Perfect cooking is said to destroy the vitality of the tapeworm, and to render it innocuous as food. Another horrible parasitic disease is trichiniasis, resulting from the small worm known as *trichinæ spiralis*. Dr. R. P. B. Taaffe says of this: "When the flesh of an animal which contains trichinæ is eaten, the young brood of trichinæ which are born pierce the mucous membrane of the alimentary canal, and are conveyed by means of the blood-vessels and lymphatics, and distributed to all parts of the body; a pork chop will show them, whereas measles are principally found about the neck. It takes a space of four days for the brood to become distributed, during which time, if the infection is discovered, they can be dislodged, the remedy considered best being large doses of calomel. A portion of a muscle, taken after death from a child 4½ years old, was examined, and in one grain of the muscle 100 trichinæ were found. The muscles of an adult weigh 40 lbs., and, if infected in the same proportion as were that of the child, would contain 28,000,000 of trichinæ, quite a population to carry about; taking each trichinæ to measure about five to six millimetres in length, the 28,000.000 in a line would give 140,000,000 millimetres, or 90 English miles. One pig has been known to infect 158 persons, of whom 28 died."

The trichinæ, as a rule, are destroyed by cooking, but where this is not perfect there is danger, and accidents, sometimes fatal, are not infrequent.

Apart from parasitical infection, what are the diseases communicable from animals to man? There is some evidence as to cattle plague and swine-typhoid, but it is not so clear as to those of which we are now to speak. Dr. Gamgee says that the transmission to man of foot-and-mouth disease admits of no doubt. The same is true of the various anthracoid maladies. Anthrax can be

conveyed by food, and is a specially fatal disease. There is at least a strong fear that erysipelas in animals is also sometimes transferred to man.

Lastly, and most important of all, there can now be no doubt that man may become the victim of tuberculosis from eating the flesh of animals infected with that disease. Tubercule is, unfortunately, very extensively prevalent amongst cattle reared for human food, and it is not always capable of detection during the lifetime of the diseased animal. Tuberculous meat is therefore constantly present in the markets, and often in enormous quantities. One of the first to call attention to the subject in this country was Dr. Henry Behrend, who, in 1880, wrote an excellent paper on the "Communicability to Man of Diseases from Animals used as Food," of which, at my suggestion, the Vegetarian Society circulated several thousand copies in a cheap form. He has returned to the subject in an article in the *Nineteenth Century*, September 1889, on "Diseases Caught from Butchers' Meat." The literature of the subject is growing rapidly, but Dr. Behrend's papers and Dr. Taaffe's address at the Brighton Health Congress, in 1881, on the "Propagation of Disease through Food and Drink," form good *résumés*, and Dr. C. F. Folsom's paper on "Our Meat Supply and Public Health" (Boston, 1875) is an excellent summary of the subject before the communicability of tuberculosis was generally allowed. In 1882 came Koch's discovery of the tubercle-bacillus. His experiments clearly showed that the disease could be induced by the transfer of tubercle from affected animals to others previously free from disease. So when the tubercle-bacillus, artificially cultivated, was introduced into the circulation of healthy animals, the bacillus was reproduced and tuberculosis resulted. The identity of the tuberculosis of man and of animals has been established by Dr. Creighton and other observers. The testimony alike of English and foreign physiologists and pathologists is that tubercle can be transmitted by the ingestion of the flesh and milk of diseased cattle.

Now, the undisputed fact that tuberculosis can be imparted to the human subject by the use of the flesh of cattle affected by tubercle is one of the greatest and gravest importance, for a large proportion of cattle have the disease, and it is one of the deadliest enemies of the human race. Painfully familiar is the dreaded name of "consumption," the popular designation of the class of disease that is responsible for one-fifth of the whole mortality of this country. In Paris it is said to be the weapon with which Death strikes down one quarter of his victims.

The Congress on Tuberculosis, held at Paris in 1888, called for the legal enforcement of the principle that the flesh of tuberculous animals should not be permitted to be sold, but should be seized and destroyed. A Departmental Committee of the Privy Council has, in this country, pronounced an equally emphatic condemnation, saying that, "although the bacilli may be found but rarely in the flesh, still the chance of their being present, either there or in the blood, is too probable to ever allow of the flesh of a tuberculous animal being used for food under any circumstances, either for man or the lower animals." This total prohibition of the sale of tuberculous flesh is now endeavoured to be enforced in Edinburgh and some other places, and an initial Glasgow attempt has led to a judicial inquiry by way of a test case before Sheriff Berry, when the whole subject was thoroughly debated on scientific and sanitary grounds. The result is that after hearing the evidence of experts on both sides of the question, the action of the local authorities is upheld, and the sale of tuberculous flesh is thus declared illegal.

Here it may be well to quote the remark of the *Lancet* (August 24, 1889, p. 385):—"Nevertheless, the doctrine of the infectivity of tubercle, and of the bacillus as the *fons et origo mali*, was so strenuously and widely adopted (so far as we can gather, only one expert confessed that he did not 'believe' in it), and had so much weight assigned to it, that it undoubtedly largely influenced the view taken by the judge. Yet it would have been quite possible to have argued the case and gained it without reference to the bacillus at all, and seeing how obscure is yet the question of its precise mode of action, this course might even have been adopted with advantage." That is to say, that whilst the bacillary theory is generally accepted, the evidence as to the communicability of disease by animal food does not depend upon that theory, but is independent of it.

The Jews, obedient to the Laws of Moses, have always rejected tuberculous flesh, and are notoriously less subject to consumption than their Gentile neighbours. The Chief Rabbi of France says that sometimes 26 out of 30 slaughtered cattle have to be condemned. Some years ago it was stated that 80 per cent. of the cattle sent to the Metropolitan Dead Meat Market was more or less tuberculous. In Hanover 8,000 lbs. of tuberculous flesh was condemned in one month. Out of the animals slaughtered for the London Jews, 40 per cent. of oxen, 29 of calves, and 23 per cent. of sheep were rejected. According to some recently-published statistics of the Berlin markets, of oxen and cows there were 1,296 tuberculous out of 98,397, or 1·36 per cent.; of pigs about 1 in 1,300; of calves about 1 in 4,000; and of sheep and goats 1 in 5,000. The proportion of tuberculous cattle in the Glasgow market was given at ½ per cent.

This brings us to the economical aspect of the question. The late Professor Leone Levi estimated the national expenditure on flesh-meat at £99,800,000; but if all tuberculous flesh is to be evicted from the markets it must lead to a great increase in the price of that which is left. Can the nation afford the addition of, say, another £25,000,000 to its butcher's bill? On a vegetarian dietary the same amount of nutriment can be obtained at about one-tenth of the cost. Flesh food is thus dear as well as dangerous, and the substitution of clean and wholesome vegetable foodstuffs would increase alike the health and wealth of the community.

Mr. A. LEGRAND sent the following paper on

UNSANITARY CONDITIONS OF DOMESTIC ANIMALS.

In spite of laudable efforts to improve the lot of domestic animals, it is astonishing to what a small extent advance in this direction has been made. The sanitary condition of animals that contribute to our daily food is of the most vital importance. First comes the cow. Its milk serves for our daily nourishment from the cradle to the grave, and many are indebted to it for their very existence for the first few months after birth. Looked at from the most selfish view, it is essential that such an indispensable animal should be kept in a healthy state. Of the condition of cows kept on grazing land, and driven night and morning into sheds, there is little to complain, except that frequently their only drinking fountain is a dirty mud hole contaminated by field drainage. The unwholesome effect of such water upon cattle hardly needs comment, and is it to be expected that cows drinking such foul fluid can yield wholesome milk? The farmyard well is more often than not polluted, while the horse-pond is frequently little better than the mud hole. In and near towns the cows exist in sheds, pent up for months without exercise; their existence is one monotony of standing, eating, lying down, and chewing the cud. Instead of pasturage their foods are more or less artificial, such as oilcake and brewers' grains, only occasionally varied by green herbage. In the summer, fermentation rapidly sets up in grains to the detriment of the cow so fed. Except in first-class metropolitan dairies, cow houses are insufficiently lighted, and seldom a ray of sunshine enters them, and yet daylight and sunshine have as much to do with the health of an animal as good food and exercise.

Many of the foregoing remarks apply equally to the ox or sheep. The condition of an ordinary straw yard should not be overlooked, and for a number of animals to be standing all day long knee deep in rotting manure is, to say the least, both unnatural and injurious. Hard as is the state of a pent-up cow, it is princely compared with the pig. Rarely he may be seen happily grazing in

an orchard, varying his fare with fresh windfalls, for he is often too dainty to touch the apple that has laid too long on the ground. So far as food goes the average farm pig has little to complain of, but his domicile is simply disgusting. He has scarcely room to turn in the uncovered part of his sty, and so must wallow in filth, and his feeding trough being in the same compartment becomes inevitably contaminated. The covered portion of the sty is, if anything, smaller, and, in point of cleanliness, little better than the uncovered part. The fate of the suburban pig in poor districts is still worse. The stench of the garbage they are fed upon from reeking tubs make the chance of their furnishing wholesome food for man very remote. Their food includes slaughter-house offal, refuse and leavings of hotels and dining-rooms, including, as often as not, pork as well as other meat. This is collected daily in carts which, from their appearance, it is safe to say are never cleaned. In summer time the stench of these carts quickly warns the passer by of their approach, and the food put in them at once commences to ferment and decompose. Can it be wondered at that trichina, fevers, and divers other diseases are rife among pigs thus herded and fed. Is it not reasonable to infer that diseases are engendered by those who eat the flesh of these pigs?

Brief reference may also be made to the conditions of those animals which minister to our necessities or pleasures other than by yielding food. Even the horse, though mainly well cared for, is often no more intelligently shod than it was 100 years back. In the average stable there is want of sufficient room and ventilation which causes the strong smell of ammonia, and an absence of adequate light appears to be the general rule. The cubic feet necessary for a healthy stable seem to be little considered. Passing notice may also be given to that companion and friend of man—the dog. Many of these are over-fed, and get little or no exercise. Some are chained up from one year's end to the other, getting no exercise at all. Kept in such a condition, the dog becomes a most offensive and unwholesome animal, and its state must be one of great misery, conducing most certainly to disease, possibly hydrophobia, and in some cases to dangerous ferocity. Even the sanitary condition of the hounds shows something wanting, as occasionally a whole pack is annihilated by disease, probably caused by their being herded together.

Woman as a Helpmate in Sanitary Reform.

The Mayoress of Worcester, Mrs. Ernest Day, read a paper on this subject. In it she pointed out—An idea which prevails is that meat is the great desideratum; the nourishment contained in fish, milk, peas, beans, lentils, and other pulse plants is overlooked. It is true that the cookery lectures have done much, but much still remains to be done in popularizing the information, and in this direction women may become real missionaries to their uninstructed sisters. May they not, by the introduction of short, bright, homely lectures on cooking and the elementary rules of domestic hygiene, at mothers' meetings and in the various clubs provided for the social recreation and instruction of girls, bring about many wise reforms? Where it is impossible to get any lady to speak to the women or girls I would suggest the reading aloud of some of the popularly-written tracts on the subject, published by the "Ladies Sanitary Association" or the "National Health Society." But these will fall very short of the good they may effect if the reader be not thoroughly and practically acquainted with the subject and able to enter into friendly chat over the individual difficulties which may arise. To explain my meaning by a simple illustration—it is not interesting to tell a woman that she should make beef-tea by cutting up the meat into small pieces, pouring on to it cold water, and simmering. These are facts; but how easy it will be for the girl, without any previous practical experience, to forget the apparently unimportant detail of whether the water be cold or boiling, and thus defeat the desired object. If, on the contrary, we have intelligent perception of the subject, we shall first explain what, doubtless, most of my hearers know perfectly well—that all meat contains a large proportion of albumen, that this albumen hardens in boiling and prevents the extraction of the nutritive properties contained in the meat. Once this principle is grasped no mistake can be made. Give to an experienced girl understanding this first principle two legs of mutton; tell her to boil one and make soup of the other. She will not be at fault; she will know that in the one case it is desirable to retain in the joint all the nutritive properties, that in order to do this the outside albumen must be set or hardened at once by contact with water at boiling-point; but she will also know that too long a subjection to such heat will toughen and harden not only the exterior albumen—which is good as preventing the emission of juices—but will render the whole joint hard and difficult of digestion; therefore, by the exercise of thought, she will deduce effect from cause, with the result of a well-cooked dinner.

Sir Douglas Galton, after speaking highly of the value of the paper read by Mrs. Day, said the manner in which women could render assistance in sanitary objects was one in which he hoped the large body of ladies present would interest themselves. The high schools, with some of which he had been connected, now enabled girls to obtain a knowledge of chemistry, which was a step in the right direction. He moved that the cordial thanks of the meeting be voted for Mrs. Day's excellent paper.

Rev. Canon Creighton would cordially second the vote. The air of true wisdom which pervaded every part of Mrs. Day's paper must have reached all who heard it. Sanitary economy was a branch of knowledge which ought to be extended to schools.

The President of the section conveyed, by desire, the thanks of all present to Mrs. Day for her admirable paper.

Co-operative Cooking, by a "Society for Supplying the Poor with Cheap and Wholesome Cooked Food."

Dr. Strange read a paper on this subject, of which the following is an abstract:—

The plan now to be briefly described has been in operation in Worcester for the past three years, and has proved so far eminently satisfactory. The object is to supply the working-classes with a kind and quality of food with which they are, to a great extent, unacquainted, and which, in most cases, they are totally unable to provide for themselves. The principle to be kept in view in carrying out this object is to avoid pauperising the poor. The food is to be paid for at a price which will be, on a large scale, self-supporting, and, on a smaller scale, at least, pay the cost of materials and of cooking the same. The food is of the most nutritious quality which can be had, consisting chiefly of pea soup (including some animal food); suet puddings, with treacle, jam, or raisins; Irish stew; and, where desirable, a lighter kind of soup for young children. Cooking for the sick might be added. The operation of the plan is carried out by establishing cooking centres in several densely-populated parts of the town, where the food is sold at mid-day *to all comers*. Children's dinners are also provided and consumed on the cooking premises at ½d. and 1d. each. The only charitable portion of the plan is carried out by the sale of tickets, 1d. each, to the clergy and others, to be distributed amongst the very destitute in severe weather.

Captain Locke, as an old sailor, supported Dr. Strange's statements of the value of pea soup as a nutritious food.

SECTION II.

ENGINEERING AND ARCHITECTURE.

In this section Mr. H. J. Marten, M.Inst., C.E., was called on to preside and take the chair. He delivered the opening address on

Sanitary Engineering.

Dealing first with the subject of fen drainage, he

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observed that the quantity of land which has to be kept dry by pumping in the valleys of the Ouse, Nene, Welland, and Witham, is about 700 square miles, an area nearly equal to that of Worcestershire. The lowering of the line of saturation, or, in other words, the lowering of the underground water level effected by these improvements, had a most important bearing on the sanitary condition of the fen districts. When the level of saturation was higher than the point below the surface of the ground which was affected by the heat of the sun, or when it was within capillary range of the surface, large volumes of miasmatic vapours were occasionally given off which spread their depressing influences far and wide over the fen country. When, on the other hand, the line of saturation was drawn down below the points named, the evolution of miasmatic vapours was greatly reduced; and with their disappearance, numerous forms of febrile and rheumatic complaints ceased to exist. In three fen districts in Cambridgeshire, North Witchford, Whittlesea, and Wisbeach, containing an aggregate population of between 50 and 60 thousand persons, the death-rate, in the 30 years between 1841 and 1870, had been reduced from 25⅜ to 20¼ per thousand, or nearly 20 per cent. Passing to the subject of town, village, and house drainage, Mr. Marten strongly condemned the construction of house and other sewers on what he called the *cloaca maxima* principle, and said that many houses had become almost uninhabitable on account of the presence of sewer gas, traceable to those large sewers. As an example of what might be done with earthenware pipe sewers he remarked that for several years he had been passing by gravitation, up hill and down dale, the whole of the sewage of Dudley, a town containing nearly 30,000 inhabitants, through a pipe five miles in length and only 13 inches internal diameter. With regard to sewage disposal, the plan now generally adopted was that of precipitation, and all those interested in the question of effluents were turning their attention to the discovery of some cheap precipitant that should render the effluent from the precipitating tanks clear and bright, perfectly innocuous to fish life, good as an irrigator when so required, and incapable of secondary fermentation. Then, with sufficient land for precipitating tanks and sludge deposit, the sewage difficulty would have become a thing of the past—except in regard to a little item which must always be present, and that was "annual cost." Dealing next with the subject of water supply, the speaker sketched the progress that had been made in that matter since the time within his own memory when part of London was supplied with water direct from the Thames at a spot not more than half a mile below where a sewer emptied itself into the river, to the last great work of water supply, the Vyrnwy reservoir. Touching the effect of this work on water he observed that the flushes of pure Welsh hill water which must be sent down the Severn from the reservoir as "compensation water" during the summer months would be a valuable sanitary advantage to the river. These flushes being in the nature of small freshets would also be of great advantage to the fish life in the river, and especially to the salmon, the interests in connection with which were worth over £20,000 a year. Whilst on that subject, he would state that very complete daily records of the height of the water in the river, the direction of the wind, and of the temperature of the air and of the water in the river, were and had been taken during the past few years; and as time passes, they will form a valuable record for comparative purposes. In conclusion, he referred to the non-consumption of smoke proceeding from domestic fires, and to give some idea of the magnitude of the smoke nuisance he mentioned that the daily winter consumption of coal in London for domestic purposes was equal to a lump of coal one acre in area and 30 feet thick. He had no suggestion to make for dealing in detail with the question, but he anticipated that before long the evil would become so intolerable, that it would be dealt with in a very summary manner, by bringing the smoke issuing from the domestic chimney under the same regulations as for the smoke issuing from factory stacks. Until this was the case, he doubted whether the individual householder could be brought to attack the question in the only way likely to bring about results on a scale beneficial to the community at large.

Mr. HASTINGS, in moving a vote of thanks to Mr. Marten, said that he feared the power of the county councils in dealing with sanitary matters were not so great as Mr. Marten supposed: but he hoped that such powers would come in a few years when Parliament should have discovered that wide areas were necessary for efficient administration in these matters.

Prof. HENRY ROBINSON, M.Inst.C.E., F.G.S., F.S.I., read the following paper on

SEWAGE DISPOSAL.

The subject of "Sewage Disposal" may with advantage be regarded from two points of view, namely, one which immediately concerns the individual householder and his family, and, secondly, that which affects the community.

I have no hesitation in stating my opinion that only a very small proportion of the dwellings of the upper and middle classes throughout the country are free from dangers to health, owing to the indifference or neglect of the occupiers to ascertain whether the essentials to making a house healthy have been complied with. This opinion I hold both with reference to houses in the metropolis and other large towns, and also with reference to mansions and detached residences in the country.

Places of health resort are visited by those who seek a brief rest to recruit their worn-out energies, and who occupy houses about whose previous sanitary history no information is available, and none is sought by the temporary occupants? It is within the experience probably of every one of my audience that defective sanitation has been discovered in either the temporary or permanent homes of themselves or of their friends, and that the resultant evils were traceable to causes that could have been easily ascertained and remedied had there been a proper previous examination of the house. To most people who are not experts the word "drains" is one which inspires a feeling of annoyance and disgust, simply because it is associated with an unknown and uncertain amount of trouble and expense. It requires an attack or threatened outbreak of illness to bring home to some people the wisdom of putting their house in order in regard to matters affecting health. Anyone can ascertain whether his house is liable to be invaded by sewer gas through untrapped sinks, bath wastes, closets, or other places (which too often are badly arranged), by pouring some pungent smelling liquid (like peppermint) down a gulley outside the house, having previously closed all windows. The presence of this pungent smell at the points I have indicated will be a sure sign of the existence of grave defects, which will pollute the air and water as well as the food, especially milk, and produce either illness or enfeeblement of body and mind.

These few preliminary observations are thrown out with a view to warn any who may be living in a fool's paradise of ignorance or indifference as to the sanitary condition of their dwellings, not to continue to adopt the "out of sight, out of mind" policy on so grave a matter, but to make a point of ascertaining that they are free from the dangers to health through defective house sanitation, which in my experience so widely prevails.

I have thought that the limited time that this paper can fairly occupy would be best devoted to the consideration of some of the most important matters which are attracting the attention both of the public and of experts. I think there will be few, if any, who will regard the means adopted, or in course of adoption, with regard to the disposal of the sewage of the metropolis as final, or even temporarily satisfactory. It is matter

of history that the scheme of discharging the sewage of London at the Barking and Crossness outfalls, which the Metropolitan Board of Works carried out, was not in accordance with the advice of a Committee of Referees appointed by the Government in 1858 (of which the Chairman of the Sanitary Institute, Sir Douglas Galton, is the surviving member), who considered that sufficient provision was not made for the prevention of the flooding of low-lying portions of the area to be dealt with, and that an unnecessary volume of sewage had to be pumped. They further advised that these outfalls were in such close proximity to the metropolitan boundary that the sewage would be liable to return with flood tides, and that deposits of mud, dangerous to health, would take place in those parts of the river where shoals and slack water occurred. The Referees advised carrying the outfalls to Sea Reach, and largely increasing the gravitation area. These recommendations were disregarded, but experience has shown that the Board of Works might with advantage have listened to them. All who have watched the results will concur with me when I say that the evils that were anticipated have been in the main realised, although it required a Royal Commission and a large outlay of ratepayers' money to establish the necessity for remedial works to prevent the continued pollution and injury to the Thames. The Chemical Precipitation Works which have been added at the outfalls have for their object the deposition of the solid matter in the sewage, and the removal of it to sea in steamers. The results that have as yet been obtained are far from satisfactory, and in the various experiments that have been made as to the chemicals to be used and their proportions, very grave doubts exist whether anything approaching the requisite standard of purity of effluent has been attained, and my own experience of the river near the outfalls convinces me that serious pollution continues. The late Board appears to have carried to the end of its existence a disregard of the advice given by those it called in to its assistance, inasmuch as Sir Henry Roscoe, who was consulted in 1887, and who carried out observations and experiments with a view to produce a better state of things, seems to have found the task a hopeless one, as he published a report in May last which condemns both the remedial works, which have been executed at enormous cost, and also the system of chemical treatment and of sludge disposal. I have referred to this important subject because the newly created County Council should regard in a critical, and even a suspicious, spirit the traditions of the late Board, and should give careful and independent consideration to the whole question of the outfalls, so that no long period will be allowed to elapse before the Thames is relieved from its present pollution, and the metropolis ceases to defile the river with impunity. The Council is fortunate in having appointed as Chief Engineer Mr. Joseph Gordon, whose well-known experience and ability justify a confident hope that he will grasp this important question, and will effect a solution of a problem which admits of settlement if approached free from partizanship or prejudice.

The disposal of the sewage of the various towns situated in the Thames Valley is making good progress, and every year shows a steady diversion of untreated sewage from the river, which for so long has been regarded by local authorities as the natural carrier of their filth, causing annoyance and injury to adjoining people. This has been very well compared to a man throwing a dead cat out of his own garden over the wall into his neighbour's.

In speaking of sewage disposal in the Thames Valley I would give prominence to the recent completion of the sewerage works of Kingston, for two reasons, Firstly, it was mainly owing to the resolute action of the Corporation of this town that the Thames Valley Main Sewerage Board was dissolved, and the various towns composing it were left to group themselves according to their natural circumstances and interests, as I had throughout advised. Secondly, because at Kingston the A. B. C. Company have undertaken the disposal of the sewage under conditions which justify special reference in this paper. It is well known that this company has fought an exceedingly difficult fight for many years in its endeavour to be adopted as the chemical precipitation system *par excellence*. My own view has always been that the A. B. C. system, as worked at Aylesbury with success, produced the best effluent of any chemical system which did not employ filtration in aid of chemicals; but that the cost of the system could only be justified on the assumption that the dried sludge obtained from the process would realise the price of £3 10s. per ton, which it was alleged to be worth. Chemists applied certain conventional rules as to the value of manurial units to this native guano—as it is termed—and gave a decided opinion that, according to all chemical tests, the material was worth nothing of the kind. The company, however, have throughout defied chemists and their experience, and have relied on agriculturalists' results, which, they contended, proved their case. At last it appears that the chemical system of relying on analysis is no longer to be solely relied on, and two chemists of eminence, namely, Drs. Dewar and Tidy, in a special and elaborate report made for this company, state as follows:—

"As to the manurial value of the native guano, we are strongly of opinion that this must be judged rather by the practical results of the agriculturalists than by presumed theoretical values based on analytical data, and on the price of ingredients not necessarily in the same physical or chemical condition. Recent research tends to show that very small changes brought about in soils may have very important indirect effects."

This statement entirely varies the conditions which have hitherto been regarded as governing the question of the value of agricultural manures, and the A. B. C. Company now are relieved from the difficulty which has previously pressed heavily upon them, namely, that of employing a chemical process which admittedly entailed a larger expense than other systems without any recognition that a higher value could be claimed for their sludge.

Mr. William Webster has devised a system of purification for sewage by means of electrolysis, which I have seen in successful operation at the Crossness outfall. The principle consists in breaking up the organic compounds of sewage into their constituent parts, by passing an electric current through iron electrodes, which results in the formation of iron oxides and chlorine. The first produces oxygen and the second produces chloric acid, which destroys organic matter. A non-oxydisable carbon plate is employed for the positive pole, and iron is used at the negative pole, so that by means of a porus diaphragm between, the component parts of the mineral salts are collected. At the non-oxydisable plate a solution of chlorine and oxide of chlorine is produced, and at the negative plate ammonia, soda, and potass are formed, which precipitate the magnesium salts and lime in the liquid. A large portion of the solid and dissolved impurities in sewage are thus deposited in the form of sludge. The process, which is one of most scientific and practical interest, is now under investigation by the officials of the County Council.

Mr. Webster has also arranged an electrical filter for the purpose of treating the effluent where a higher degree of purity is required. He applies the electric current to a carbon filter, the carbon being the positive pole; the nascent oxygen produced in the pores of the carbon by the current destroys organic matter in the fluid, and at the same time preserves the filter in a clean state. This system is obviously applicable to the filtration of domestic water.

M. Hermite (of electric bleaching notoriety) is employing, at Rouen, a battery of electrolysers (with anodes of platinum and kathodes of zinc) to produce a deodorising and disinfecting action upon sewage. He passes the sewage through a battery of this kind containing common sea salt, in the proportion of from 70 to 350 grains per gallon.

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I have had under investigation for some time the precipitating and filtering materials which are employed at Acton and Hendon by the International Sewage and Water Purification Company. The process consists in first precipitating the bulk of the suspended and some of the dissolved matters by means of what is termed ferrozone (it was formerly called magnetic ferrous carbon), and then in passing the effluent through a filter containing a material named polarite. The essential difference between these two materials is that the precipitating substance (ferrozone), which is mixed with the sewage, contains mainly sulphate and magnetic oxide of iron in a *soluble* form, whereas the filtering substance (polarite) is composed of more than 50 per cent. of magnetic oxide of iron, with silica, lime, alumina, magnesia, and carbonaceous matters which are absolutely *insoluble*. These materials are manufactured from natural deposits which are found in the anthracite coal formation. The main features in this process are as follows:—So far as the first part is concerned, the precipitating action is produced without the aid of lime. At Acton about eight grains per gallon of sewage are employed, and from one to three hours rest are allowed. Clarification and deodorization are thus effected, and the deposited sludge (when pressed into cakes in the usual way) is found to have a manurial value which leads to its being purchased and used on land. The next part of the process consists in passing the effluent from the precipitation tanks through a layer of the other substance—polarite—and it is necessary to place above it a stratum of sand or other material (the surface of which requires occasional raking over) to intercept any suspended matter which would clog the pores of the filter and interfere with its action. The effect of polarite is singular, and appears to be unchangeable, at least no alteration in its efficiency has been found after fourteen months use at Acton, according to a report by Sir Henry Roscoe; a longer experience elsewhere is stated to give the same results. This filtering material thus discharges an important function in sewage treatment, as it serves in lieu of a much larger area of land, or of an artificial filter such as is often made by alternate strata of burnt clay and alluvial soil. The explanation of the action of polarite is that it liberates from its microscopic pores large volumes of oxygen which attack and destroy organic impurities. The magnetic spongy iron which came into use some years ago for purifying water was found to rust and cake; polarite, however, is remarkable for its entire freedom from rusting or caking. The results which I have witnessed lead me to form a favourable opinion of it both for precipitating sewage and for the further purpose of filtering effluent sewage either from tanks or from sewage farms when the purification, by passing it through land, has not produced the required standard of purity.

Another precipitation system, called the "Amines" process, has recently attracted attention. The materials employed are certain organic bases, which are found in the chemical group of Amines (ammonia compounds) in combination with lime. The effect which is claimed for this is that the sewage effluent from the process is sterile as regards the presence of living organisms, as the reagent which is formed by the chemicals is completely destructive to organic life. I have witnessed a trial of the process at the Wimbledon Sewage Works. Here herring brine is used, which is mixed with milk of lime and evolves a soluble gaseous reagent having a briny odour. This, when applied to the sewage, produces rapid deodorization and deposition of flocculent matter. Dr. E. Klein, F.R.S., has examined the process, and confirms the sterilizing of the effluent which is claimed.

The observations and experiments of Mr. Robert Warrington at Rothamsted, on the distribution of the nitrifying organism in the soil (which are at intervals brought before the Chemical Society), have greatly assisted those who are interested in the purification of sewage on land. Dr. Munro at Salisbury has made (and is understood still to be making) very useful trials with reference to sewage sludge. All experience now tends to the conclusion that the old bugbear of chemical precipitation, namely, sludge, no longer need exist where proper precipitants are used.

The regulations which are enforced in this country to diminish death-rate by proper sewerage and sewage disposal works, should be applied abroad wherever our influence can be exerted to mitigate sanitary evils which abound in many great centres of population in the British Empire. At the recent International Congress of Hygiene in Paris, the insanitary condition of Alexandria was referred to, and its state was denounced as a danger to all Europe. The necessity for properly dealing with the sewage of Calcutta has long been recognized, and it is understood that steps are being taken to remedy the existing unsatisfactory state of things that prevail there; Mr. James Kimber, C.E., being now engaged in advising the Commissioners of that place what ought to be done. Numerous similar large centres of population under our influence could be quoted where much needed sanitary reforms are demanded.

There is a great waste of public money throughout the country in regard to sewage disposal. Many towns are continuing the employment of systems which have long since been superseded, and I consider that a time has arrived when an investigation by an impartial and qualified Commission into the question of sewage disposal would lead to most valuable and useful results to the community, both from a sanitary and economic point of view.

Mr. B. H. Reeves read the following paper on

Experiments in Sewer Ventilation, considered in Relation to the Public Health.

In the early part of August this year, the public and sanitary authorities were somewhat alarmed at an outbreak of typhoid fever at the west-end of London. This occurred in houses where the sanitary condition was thought to be perfect. From the accounts given to the papers at that date, a leak in the main drainage was thought to be the cause; but when the matter was discussed in the House of Commons on September 20, no definite cause was given as to the source of the outbreak.

Before considering the various experiments in sewer ventilation, let us take this case in the Mayfair districts, and from facts connected with them see whether or not this outbreak was not due solely to sewer gas or the want of effective ventilation to the sewers.

It is an old theory with sanitarians that to prevent sewer gases from being formed, the air in the space over sewage in drains or sewers should be changed as quickly as possible, so as to prevent bad gases being formed in sewers. To do this we have adopted the same means and appliances as are used in the ventilation of buildings, with the result that many failures have been experienced.

The motive power to form fresh air currents in sewers is formed by the additional weight per cube foot of air on one grating as compared to that of another, whether this weight is caused by the difference of temperature or wind pressure.

Now, the temperature in the sewer in the Mayfair district would average 50° to 54° during the year; in the summer months it would average about 52°. Taking 52° the average, the weight of the air in the sewers would be 544·67 grains per cubic foot.

Taking the temperature registered this year, from January to August, by Mr. Steward, of the Strand, as shown by the following tables, it will be seen that from January to April the weight of air per cubic foot on the gratings in the street was heavier than that of the sewer, and this atmosphere of its own weight supplied oxygen, or fresh air, to the sewer; but after April to August the atmosphere becomes lighter, and loses its force as a motive power of ventilation, with the result that the same air becomes stagnant and forms a sewer gas.

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JANUARY, 1889.					FEBRUARY, 1889.					MARCH, 1889.					APRIL, 1889.				
Rainfall.	Maximum.	Minimum.	Average.	Pressure in Grains.	Rainfall.	Maximum.	Minimum.	Average.	Pressure in Grains.	Rainfall.	Maximum.	Minimum.	Average.	Pressure in Grains.	Rainfall.	Maximum.	Minimum.	Average.	Pressure in Grains.
	40	30	35	18·75	·08	58	45	51½	·55	·07	38	31	34½	19·32		54	37	45½	7·02
	41	30	35½	18·13	·02	45	36	40½	12·66		36	31	33½	20·46		51	40	45½	7·02
	40	32	36	17·61		44	33	38½	14·78		36	27	31½	22·76		47	39	43	9·77
	37	33	34½	19·32	·27	38	35	36½	17·44		38	25	31½	22·76	·19	54	40	47	5·38
	32	27	29½	25·05	·04	42	30	36	17·61		39	26	32½	21·76	·05	53	41	46½	5·93
	32	25	28½	26·25	·03	47	32	39½	13·66		47	29	38	26·84		53	41	47	5·39
	40	24	32	22·18	·37	41	37	39	14·22	·01	51	36	43½	9·21		55	40	47½	4·84
	47	28	37½	15·94	·03	50	32	41	11·99	·37	54	39	46½	5·93	·04	57	43	50	2·15
·02	50	38	44	8·66	·13	39	32	35½	18·13	·23	51	37	44	8·66	·05	49	44	46½	5·93
·20	42	39	40½	12·66		33	26	29½	23·34		45	36	40½	12·66	·23	46	41	43½	9·27
·10	43	37	40	13·10	·39	35	27	31	23·34		46	36	41	11·99	·33	50	39	44½	8·03
	38	33	35½	18·13		38	25	31½	22·76		51	32	41½	11·43	·04	53	40	46½	5·93
·22	41	35	38	15·35		51	25	38	15·35	·03	54	36	45	7·57	·07	49	40	44½	8·03
	41	37	39	14·22	·38	51	30	40½	12·66		50	40	45	7·57	·11	46	39	42½	10·33
	39	36	37½	15·91	·35	47	35	41	11·99		41	33	37½	15·91	·05	49	39	44	8·66
	38	33	35½	18·13		47	31	39	14·22		52	31	41½	11·43		51	39	45	7·57
	43	34	38½	14·78	·12	59	34	46½	5·93		54	35	44½	8·03		57	42	49½	2·78
	53	37	45	7·57		56	43	49½	2·78		50	42	46	6·48		60	45	52½	·53
	49	40	44½	8·03		53	44	48½	3·86		55	41	48	4·30		71	46	58½	6·33
	45	38	41½	11·43		52	42	47	5·39	·12	52	40	46	6·48		61	48	54½	2·66
·13	44	32	38	15·35	·07	47	39	43	9·77	·23	43	40	41½	11·43		56	43	49½	2·78
·03	43	33	38	15·35	·02	44	33	38½	14·78	·17	46	34	40	13·10		61	42	51½	·53
	43	34	38½	14·78		39	30	34½	19·32		54	35	44½	8·03	·04	57	40	48½	3·86
	47	35	41	11·99		40	31	35½	18·13		60	36	48	4·30	·42	52	43	47½	4·84
	47	39	43	9·77		40	33	36½	17·04	·07	59	47	53	1·08	·16	52	43	47½	4·84
	54	43	48½	3·86		39	30	34½	19·32	·09	50	42	46	6·48	·01	62	40	51	1·10
	44	35	39½	13·66		39	31	35	18·75	·02	49	36	42½	10·32	·15	64	45	54½	2·66
·03	51	37	44	8·66	·05	36	31	33½	20·46		54	32	43	9·77	·09	59	46	52½	·53
	50	43	46½	5·93							59	35	47	5·39	·07	59	42	51	1·10
·11	50	35	42½	10·32						·02	56	46	51	1·10		61	47	54	2·16
·05	55	40	47½	4·84						·07	53	42	47½	4·84					

MAY, 1889.					JUNE, 1889.					JULY, 1889.					AUGUST, 1889.				
Rainfall.	Maximum.	Minimum.	Average.	Pressure in Grains.	Rainfall.	Maximum.	Minimum.	Average.	Pressure in Grains.	Rainfall.	Maximum.	Minimum.	Average.	Pressure in Grains.	Rainfall.	Maximum.	Minimum.	Average.	Pressure in Grains.
·12	55	46	50½	1·63		71	51	61	9·42		74	57	65½	14·03		86	61	73½	21·68
·04	57	45	51	1·10		83	56	69½	18·02		68	55	61½	9·93		79	60	69½	18·02
·30	61	45	53	1·08		76	60	68	16·53		65	55	60	8·39	·09	69	61	65	13·56
	71	50	60½	8·90		78	54	66	14·51		74	57	65½	14·03	·18	76	58	67	15·52
	77	53	65	13·56		66	57	63½	11·98		81	57	69	17·53	·06	72	59	65½	14·03
·02	77	54	65½	14·03		85	56	70½	19·01		83	57	70½	19·01	·23	70	55	62½	10·96
	66	55	60½	8·90	·43	80	59	69½	18·02		74	60	67	15·52	·06	75	54	64½	13·02
	65	51	58	6·31	·29	61	55	58	6·31		65	57	61	9·42		73	53	63	11·47
·02	73	53	63	11·47		61	54	57½	5·79	·13	73	57	65	13·65		67	56	62	10·45
·31	63	51	57	5·27	·62	54	50	52		·19	74	60	67	15·52	·13	70	53	61½	9·93
·03	60	51	55½	3·69	·49	62	50	56	4·22	·16	77	55	66	14·51		69	50	59½	7·82
·48	54	49	51½	0·55	·02	67	54	60½	8·90	·12	78	62	70	18·52	·21	63	53	58	6·31
·06	60	50	55	3·17		76	57	66½	15·01	·33	73	61	67	15·52	·02	65	55	60	8·39
·02	63	51	57	5·27		66	52	59	7·35	·20	72	60	67	15·52		70	55	62½	10·96
	65	47	56	4·22		69	57	63	11·47	·03	70	57	63½	11·98	·17	77	59	68	16·53
	74	47	60½	8·90	·33	74	55	64½	13·02	·02	71	52	61½	9·93		78	59	68½	17·03
	68	49	58½	6·83		69	56	67½	16·02	·05	71	55	63	11·47		75	62	68½	17·03
	65	51	58	6·31		68	51	64½	13·02	·09	71	56	63½	11·98		73	53	63	11·47
·06	61	55	58	6·31		70	50	60	8·39		73	53	63	11·47		74	57	65½	14·03
·19	66	53	59½	7·82		77	54	65½	14·03		67	55	61	9·42	·19	67	59	63	11·47
	71	54	62½	10·96		75	56	65½	14·03	·02	70	59	64½	13·02	·03	67	55	61	9·42
	81	55	68	10·53		79	54	66½	15·01	·67	70	52	61	9·42	·14	69	56	62½	10·96
	84	60	72	20·50		72	54	63	11·47		66	53	59½	7·82	·04	67	52	59½	7·82
	82	60	70	18·52		71	55	63	11·47	·39	68	51	59½	7·82	·04	67	53	60	8·39
·02	74	61	67½	16·02	·02	80	56	68	16·53	·07	65	57	61	9·42	·60	67	47	57	5·27
·66	59	54	56½	4·74		81	57	69	17·53	·03	70	55	62½	10·96		63	52	57½	5·79
·88	58	52	55	3·17		83	59	71	19·51	·09	62	56	59	7·35					
·40	66	53	59½	7·82		80	60	70	18·52	·32	74	54	64	12·49					
·09	63	51	57	5·27		82	60	71	19·51		74	59	66½	15·01					
·06	64	49	56½	4·74		83	60	71½	20·00		77	66	71½	20·00					
	62	50	56	4·22							81	59	70	18·52					

By comparing the amount of rainfall registered, and estimating its power on the ventilation of the sewers, it will be seen that from June 16 to July 8 the air in the sewers must have remained for 22 days almost stagnant; but on the 23rd and following days it was driven out of the sewers and inhaled by the inhabitants, as shown on Diagram No. 2.

Thus it will be seen that although the water supply of the district is delivered from its source, and supplied to the houses pure, it is possible from these gases to be contaminated with sufficient typhoid poison to give the disease. Milk and food would pick up these poisons from the atmosphere and mislead medical men, who, if they found the milk impure, may attribute the poison to have been conveyed in the milk.

Without going into speculative ideas, we have the fact

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that this impure atmosphere remained over sewage water for 20 days, and was only changed to a very small extent by the rising and flowing of the sewage. We have also the fact that it entered buildings and was inhaled by the inhabitants. These facts I submit for discussion, and in judging the other experiments, which will now follow, I would ask you to discard theories, and keep in view the true motive power of ventilation of sewers and drains by the additional pressure per cubic foot on the inlet as compared to that of the outlet.

To show with what regularity the temperature is kept in sewers at all seasons of the year, notice the heat supplied to the closed iron manhole covers which are fixed on pavements in the metropolitan area by the air in sewers. During the snow-storm of February 10, the temperature on the surface being low and freezing hard, I noticed that as soon as the snow fell on these iron manhole covers it melted, and the water ran off them on to the pavement, freezing and forming ice as soon as it covered the stones; and for days there were from 3 inches to 6 inches of snow on the pavements when not cleared off. When the snow was not falling, the iron covers were as dry as the surface of the road on a summer day. At Hendon, in the summer of last year, the thermometer registered 93° on the surface, and 50° at the bottom of the open manhole which formed a ventilating shaft 13 feet deep. This will show with what regularity an even temperature of 50° to 54° is maintained in sewers during the whole year, and how much a temperature must affect the ventilation of them.

By comparing the pressure of the summer months of 1885 to that of 1888, a great difference is shown. Thus, in the month of July 1885, the atmosphere on the surface averaged daily during the month 7·21 grains per cubic foot less than in the year 1888. In 1885, during a whole month, no atmospheric pressure was experienced at the gratings; whilst in 1888 there was a partial pressure during four days of 7·21 grains per cubic foot, to force fresh air into the sewer.

The absence of this fresh air is shown in a very remarkable way on the London death-rate from zymotic disease. . In 1885 the number was 2,740 per million of inhabitants, whilst in 1888 it was 2,519 per million. Taking the population at 4,500,000, the excess in the death-rate in 1885 to 1888 was 994.

There are many systems of ventilation as applied to sewers, which, if applied to a building, would be more or less effective; but when attached as they are to sewers, they are inefficient and useless. The reason of this is that there are reverse powers always at work in the sewers forming currents, which are greater than the powers of ventilation; consequently, as the lesser power must give way to the greater, the ventilation becomes inoperative.

The Ventilation of Sewers by Shafts.

As the evidence of some experts as to the value of shafts when used for sewer ventilation are so conflicting, it is not an easy matter to produce facts which will cause engineers to alter their opinion on the subject.

For instance, one engineer will take you to a shaft or series of shafts which at the top is giving off a good current, whilst another will take you to one, or many, where the air is stagnant, or fresh air is going down them into the sewers. The first would be strongly in favour of shafts, whilst the latter would condemn them; yet neither of the above cases would be any proof as to the value of shafts for sewer ventilation. In the first case the examination may have been made when the sewage in the sewers was gradually rising in them, and simply forcing the air out of the ventilating shafts, whilst in the latter it was made when the liquid was lowering itself and drawing fresh air into the sewers to fill the additional air space caused by the lowering of the sewage.

If these tests were made when the sewage was perfectly still, and no water was flowing into them from branch drains, the value of shafts for sewer ventilation could be easily ascertained.

Many engineers know by experience that when sewers are ventilated, either by open gratings at the street level, or by shafts, it is not unusual for the air of the sewer to be passing sometimes down from the top to the bottom, and, at other times, from the bottom to the top, in at one grating and out at the other in the most irregular manner. This is caused by water friction on the air and its face as a motive power, whether greater or less than the air current depends on the velocity and area of the sewage flow.

Another form of ventilation that has been advocated for sewers is the moving of the sewer gas by placing extractors on lines of sewers and having intermediate air spaces between them. Many years ago I adopted as an experiment a similar system, but instead of the motive being heat I used a Vinty's fan, driven by water, and successfully washed the sewer gas through a liquid in an apparatus or ventilator fixed in the manhole.

The dip, or resistance to the sewer gas for washing, was $\frac{1}{10}$th of an inch, and the gas in passing through the ventilator was cut up into the smallest particles to thoroughly disinfect it. For three weeks I had a constant and regular current of 60 cubic feet a minute, and continued to pull fresh air into the sewers from inlets half a mile distant, and 115 feet above the level of the fan, and pumped it at the rate of 60 feet per minute. This experiment, although at first was satisfactory, had to be abandoned for the following reasons. A storm of rain occurred, and a trap on a branch drain, about 20 yards from the fan, was syphoned. This formed an air-inlet, and fresh air, not sewer gas, passed through the fan. The air was exhausted by entering the trap and passing through this 20 yards of branch-drain and sewer, leaving the air in the remaining portion stagnant.

From the above experiments the difficulties in sewer ventilation seem insurmountable. They are, if we continue to follow the lines as applied to buildings, and do not make use of the motive power given us by the water in the sewers. To effect this I have, for two years past, been working a plan which prevents sewer gas being formed.

Discussion.

Mr. Peake (London) advocated the destruction of sewer gas by burning.

Mr. Cooper (Wimbledon) considered that the ill effects of sewer gas had been much exaggerated, and that it would be difficult to prove that it was a source of typhoid fever, as some persons asserted.

Mr. Washington Lyon (London) was in favour of unventilated sewers and Shone's process.

Mr. Wilcox held that Shone's process was only a method of pumping and had nothing to do with ventilation.

Mr. Munce (Dublin) believed much of the complaining about sewer gas was groundless. If the sewers had open grates in the streets at distances of 80 or 100 yards the air outside would be perfectly good.

Mr. Wilkinson pointed out that sewer gas was only produced by stagnant sewage, and that if drains were properly constructed and self-cleansing there could be no stench.

Mr. Marten was of opinion that the best way to deal with the question was to have as many ventilaters as possible, so as to keep the air in the sewers as far as they could fresh.

Mr. S. M. Burroughs read the following paper on

Antiseptic Ventilation for Hospitals and Sanitoriums.

The object of the invention or system shown is to first filter the air, then to regulate its temperature, then to propel it to any room desired, and lastly to render it antiseptic.

After a careful examination of the various systems of ventilation by forced circulation, I have selected that of

the Sturtevant Blower Co. of London as being most suitable for the application of my invention, because it can be made to blow air to any part of a building by means of sheet iron or tin pipes.

The blower consists of a revolving fan having several blades parallel to the axis. It can be run by a steam engine, which can also be utilized for lifts, electric lights, centrifugals in laundries, mills for grinding, &c. The waste steam from the engine supplies the heat, excepting perhaps for a large building, when it can be supplemented by live steam.

1. The air can be drawn down a chimney or shaft, and is filtered through a coarse strainer to remove the larger particles, and through finer material to take out fine dust, fog, and smoke.

2. If the air is of the right temperature it is drawn directly into the blower, but if it requires to be heated, a damper directs it into a rectangular box of sheet iron packed with tubes containing waste steam from the engine, or live steam from boiler, or both. In circulating round these tubes the air becomes heated, is drawn through the blower, and propelled through main and branch pipes to any or every part of the building.

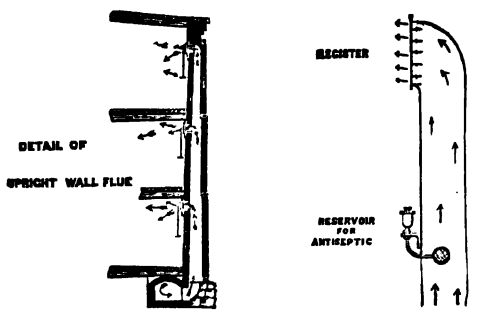
3. If only one antiseptic or air medication be desired at one time it may be distributed from the main pipe, but a different medication can be used for each room if required.

4. A volatile antiseptic may be conveniently introduced by means of suitable mechanism, by means of which the liquid can be made to drop regularly in pure sponge or other absorbent or distributing material, from whence it is readily absorbed by the current of air. Carbolic acid, creolin, pinol, terebene, eucalyptia, thymol, or other volatile antiseptic, can be readily employed in this manner.

5. If the air is too moist or too warm, it can be both dried and cooled by causing cold water to pass through the pipes referred to instead of steam. The object of the invention is to enable hospital physicians to exactly control the temperature and to medicate the air, having previously deprived it of dust, &c.

The apparatus is not secret or patented, and can be used freely by anyone.

This apparatus constitutes the most economical system of heating buildings with which I am familiar. As a system of ventilation, it is the most effectual; while for the antiseptic treatment of consumption and germ diseases, also for making antiseptic the surgical wards of hospitals, it possesses advantages over inhalers and personal appliances which interfere more or less with natural breathing.



The PRESIDENT of the section thanked Mr. Burroughs for his paper.

THE SMOKE NUISANCE.

Mr. H. FLETCHER read a paper, in which he discussed the smoke nuisance in manufacturing districts, and the efforts made for its abatement. He held that the fault lay with the administration of the Public Health Act. He advocated the general adoption of mechanical stokers belonging to the "slow-feed" or "coking" class as distinguished from those that throw the fuel in small quantities on to the red fire—known as "sprinklers." The use of such smokeless mechanical stokers would give to the manufacturing districts a better week-day atmosphere than that now found on Saturday afternoons and Sundays; for even then furnaces were being worked with great emissions of smoke (though at longer intervals) for mill-warming purposes.

Mr. WILKINSON expressed his concurrence with the paper.

Sir DOUGLAS GALTON said his attention had been directed to smoke abatement for a considerable period, and there was now no reason why manufacturing towns should be injured by black smoke. Most of the smoke of London arose from domestic fires, and he advocated the taxation of chimneys which emitted smoke, or some other means to obtain immunity. The evil was becoming so great, and the population of the country growing so fast, that he was convinced that they must adopt some radical measure for the prevention of smoke from domestic houses as well as manufactories.

The PRESIDENT expressed the thanks of the section to Mr. Fletcher for his paper.

SECTION III

CHEMISTRY, METEOROLOGY, AND GEOLOGY.

Dr. TRIPE, the president of this section, read a paper on

WINDS, WITH SOME REMARKS ON THEIR SANITARY EFFECTS.

In the course of which he showed how infection had been proved to have been conveyed long distances by air currents. In 1882 he gave evidence before the Hospital Commission on small-pox and fever hospitals, and then stated that he could not in any way account for the repeated outbreaks of small-pox in a street parallel with the Eastern Hospital, situated 400 feet away, and separated from it by the East London Workhouse, unless they were caused by infective matter carried by the air and blown over the Workhouse. In his report to the Hackney Board of Works for the year 1884 he discussed this matter fully, and proved an outbreak which occurred on March 21 and 22 in that district to have had its origin on the 6th and 7th of the month, when the wind, after veering about, blew steadily at a very low rate of speed, or was calm, viz. about three or four miles an hour, in the direction of the localities affected. Mr. Power also pointed out in 1882 a similar coincidence as regards the the wind and small-pox outbreaks in the vicinity of the Fulham Small-pox Hospital. During the epidemic of 1883–84 he identified several outbreaks of the disease in the vicinity of the hospital to periods when the wind was moving over those portions of the district at a very low velocity. Some physicians doubt the possibility of small-pox infection being carried more than a few feet, but he does not understand how, if the disease be set up by a living organism falling on a soil in which they can develop it should be able to infect a person at 20 feet distance, and not at 100 feet, or even at half a mile. Surely a living organism cannot be destroyed (oxidized) in its passage through the air for half a mile, when the wind is travelling at the rate of only four miles an hour, that is to say, in 7½ minutes. The reason why zymotic diseases, and especially small-pox, are not more frequently spread by the wind was that a certain dose or intensity of the poison, as well as a susceptible condition of the recipient, must co-exist to set up the train of symptoms constituting an attack of the disease.

Dr. PERCY F. FRANKLAND, Ph.D., B.Sc. (Lond.), Assoc. Royal School of Mines, F.C.S., F.I.C., then read the following paper on

SOME RECENT RESULTS OBTAINED IN THE PRACTICAL TREATMENT OF SEWAGE.

Although it is not difficult to obtain reports, substantiated by more or less elaborate chemical analyses, on the efficiency of patent processes for the treatment of

town sewage, yet the value of such testimonials is generally but slight, inasmuch as the experiments upon which they are based have usually been made under circumstances of such an exceptional character that similar results are rarely if ever realized in actual practice.

Having recently had occasion to inspect a number of the largest sewage works in the country, in connection with a proposed scheme for the disposal of the sewage of one of our most important towns, it appears to me that the results of this inquiry into the daily practical working of the more important processes now in operation, may not be without interest to those directly or indirectly concerned with the disposal of town sewage.

The sewage works examined were six in number, and were representative of all the principal methods of treatment now in vogue. For various reasons it will be preferable to refer to the several towns by distinctive letters, instead of by their names. In the case of three of the towns the method of treatment was by precipitation only, whilst in the other three the latter was supplemented by application to land.

Treatment by Precipitation only.—Town A.—In the case of this town 9,000,000 to 10,000,000 gallons are treated daily and the only precipitant used is lime, which is added in the proportion of one ton to 1,000,000 gallons of sewage. The lime is made into a thin cream, which then mixes with the sewage in the pump-well, and becomes thoroughly incorporated with it in the process of pumping. The mixture then flows into a series of twelve depositing tanks, of a total area of 71,270 square feet, or 1·75 acre, and of an average depth of six feet, the cubical contents being 2,500,000 gallons. The sewage has thus to pass a distance of 1,200 feet through the tanks, and this passage occupies about two hours. The tanks are divided from each other by walls, over which the sewage flows. As indicating the distribution of the precipitate it should be mentioned that the first four tanks are cleaned out consecutively about every fourth day, the fifth and sixth about every seventh day, whilst the remaining six scarcely ever require cleaning.

From the analyses given below, through the proportion of chlorine it appears that the samples of effluent collected were all derived from somewhat weaker sewage than that represented by the sample of raw sewage. The suspended matter in the effluent sewage, however, may be taken at about 2-3 parts per 100,000, and of this about ⅓ was organic in nature.

Towns B and C.—These two may be considered together, inasmuch as the method known as "intermittent treatment" with lime alone is practically the same in both. At town C, the daily quantity of sewage dealt with is 10,000,000 gallons. The sewage receives fifteen cwts. of lime per 1,000,000 gallons, the lime being as usual added in the form of cream. The precipitation takes place in a system of no less than thirty tanks, the important distinguishing feature being that a period of perfect rest is given to the sewage in each tank. Each tank has a capacity of 50,000 gallons, the total tank capacity being 1,500,000 gallons. The method of working consists in filling four tanks simultaneously, this occupies upwards of sixteen minutes; after about twenty minutes complete rest, the liquid is run off through a floating exit-pipe, from which it passes over a weir in a thin layer, and then downward through a filter which is constructed of lumps of coke, to a depth of about two feet, after which it passes upwards through a similar layer of coke. The coke in these filters is changed about every three months. The process of drawing off the clarified liquid from a tank takes about two hours, but it is considered advisable to allow even longer.

The analyses given below show that this complicated system of intermittent precipitation yielded results very similar, but by no means superior, to those obtained by the simpler method of continuous precipitation adopted in the case of town A. Moreover, the process of filtration through coke, as carried out at these works, appears to deteriorate rather than improve the character of the effluent.

Treatment by Precipitation and Subsequent Application to Land.—In the case of the three other towns visited, this compound method of treatment was in operation, but in order to be able to compare the efficiency of the methods of chemical treatment with those adopted in the three towns referred to above, the effluent from the precipitation tanks, as well as that from the land, was in each case submitted to separate chemical examination.

Town D.—Here the sewage of 50,000 inhabitants, amounting to 2,000,000 gallons daily, is treated with 13 cwts. of quick or one ton of slaked lime and 18 cwts. of sulphate of alumina. The sewage first receives the requisite amount of sulphate of alumina, after which the lime is added, a thorough mixture being effected in a special tank of small dimensions. The treated sewage then flows into eight tanks arranged in parallel series, each tank being 5 ft. 6 in. in depth, and having a capacity of 120,000 gallons is not subdivided by any partitions. Thus, although a given volume of sewage only passes through a single tank, still the total tank capacity is so large in proportion to the volume of the sewage, that the rate of passage through the tank is extremely slow.

On referring to the analyses it will be seen that this extremely simple arrangement also yields an effluent containing as little suspended matter as that from any of the more complicated systems of tanks already referred to. Two out of the eight tanks are daily completely emptied, and yield 74 tons of wet sludge. It is worthy of notice that at these works a ready sale for the pressed sludge is obtained at the rate of about 1s. a load, and, in point of fact, at the time of my visit there was little or no sludge on the premises.

The effluent from this process of chemical treatment then passes on to a plot of land eight acres in extent, and laid out in intermittent filters, underdrained at a depth of 4 ft. to 6 ft. This land yields seven crops of rye-grass annually, and realises from £2 to £3 a week.

The chemical examination of the effluent from this land shows that, whilst the proportion of suspended matter is undiminished, the dissolved organic matter has undergone very considerable reduction. It is evident, however, that the area of land is insufficient to completely deal with the quantity of sewage applied to it, inasmuch as the effluent is quite free from nitrates.

This town affords a very striking and interesting example of sewage treatment, both by chemicals and filtration, the method of precipitation being remarkably simple and compact, whilst the area for filtration purposes is exceptionally small.

Town E.—In the case of this town, the principal purification relied upon is the application to land, towards which the chemical treatment is merely a preliminary operation.

The sewage, about a third of a mile before reaching the works, receives an addition of lime to the extent of about 16 cwts. per 1,000,000 gallons. On reaching the works the treated sewage divides into three large tanks arranged in parallel series, and in passing through which precipitation takes place.

Reference to the analytical table will show that the effluent from this single tank precipitation contained only a small proportion of suspended matter, whilst the organic matter in solution was scarcely reduced at all. The effluent from the tanks is then distributed over the land by way of irrigation, each acre receiving on an average the sewage of 400 to 500 persons. The soil is extremely well suited for the purpose, being gravelly throughout, and is drained to a minimum depth of 4 ft. 6 in. The farm is made to yield a very varied produce; thus—milk is a large and increasing item, a considerable portion of the area is devoted to mangolds, swedes, and Kohl rabi, another large fraction to market garden produce, another, to Italian rye-grass, another to cereals, besides a large part laid down as pasture.

A sample of the effluent from the land was collected and found to be almost free from suspended matter, whilst

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the organic matter in solution was also very largely reduced. As evidence of the liberal allowance of land given to the purification of the sewage, a very large proportion of nitrates was found in the effluent, which in this respect presented a marked contrast to the conditions existing in the case of town D, where the sewage of about 6,000 persons is applied per acre.

Town F.—In the case of this town the allowance of land for purification is even greater than in that of town E, inasmuch as only the sewage of about 300 to 400 persons is applied per acre.

The method of chemical treatment is varied, sometimes lime and sulphate of alumina being used, whilst at other times, especially in summer, lime and refuse carbon are employed. The lime is added first (about 16 cwts. per 1,000,000 gallons), and then the sulphate of alumina (about 5 to 10 cwts. per 1,000,000 gallons); the carbon is employed in about the same proportion as the lime.

After thorough mixture taking place during the process of pumping, the treated sewage passes into six tanks arranged in two parallel sets of three. In these tanks a period of perfect rest is given, which varies in duration according to the quantity of sewage coming down. The clarified liquid is drawn off by means of floating arms, and then passes on to the land. The mode of application consists in causing the sewage to flow twice over the surface of the land, as the attempt to filter it by under-draining proved very unsuccessful, in consequence of the heavy nature of the soil.

The principal produce of the farm is Italian rye-grass, which is cut five times annually; there are also smaller plots under oziers, mangel-wurzel, and market garden.

Two complete series of samples, taken on two different days, were submitted to analysis. On the first occasion lime and sulphate of alumina, with a quarter of an hour's rest in the tanks, were employed, whilst on the second day lime and carbon were used, with half an hour's rest in the tanks. The results obtained were essentially similar on both occasions; in neither case was the removal of suspended matter, by precipitation, very satisfactory, whilst a marked reduction in the proportion of dissolved organic matter was effected. In both cases the effluent from the land was almost quite free from suspended matter, and the dissolved organic matter was very greatly reduced.

General Conclusions.—The six examples described above may be taken as fairly typical of the average performance of some of the best managed sewage works in the country.

The results show that if the only object of the treatment is the production of a fairly clear effluent, this can be satisfactorily attained by a number of processes of chemical precipitation.

As regards the chemicals employed, there would appear to be distinct evidence in favour of the use of sulphate of alumina along with lime, as by this means the dissolved organic matter is generally more reduced than if lime alone be employed. In no case, however, can any very great reduction in the proportion of dissolved organic matter be secured.

As regards the execution of these precipitation processes, the method of subsidence under complete rest, at any rate as at present carried out, appears to have little to recommend it; for although unquestionably correct in theory, it is difficult in practice to afford rest of sufficient duration for the advantages to come into play; whilst the far greater complexity both of construction and management which this method entails are very much against it. In none of the three towns in which this method was in operation was the effluent remarkable for its freedom from suspended matter.

In practice the greatest success is to be anticipated by employing the maximum capacity in a single tank of moderate depth without partitions. In short, let the whole of the available money be devoted to the acquisition of the largest system of tanks, of the simplest construction, and requiring the least attention.

In cases where not only a clear effluent, but also one as free as possible from dissolved organic matter is required, we must resort now, as heretofore, to the application of the sewage to the land. In such cases, however, the sewage should invariably be submitted to a preliminary process of precipitation.

As regards the amount of sewage which can be safely applied to a given area of land, this must depend mainly upon the nature of the soil; but in all cases the guarantee of active oxidation should be demanded in the shape of a marked proportion of nitrates in the effluent.

Results of Analysis expressed in parts per 100,000.

Description.		Matters in Solution.							Matters in Suspension.		
		Total Solid Matters.	Organic Carbon.	Organic Nitrogen.	Ammonia.	Nitrogen as Nitrates and Nitrites.	Total Combined Nitrogen.	Chlorine.	Mineral.	Organic.	Total.
	Chemical Treatment only:—										
Town A.	Raw Sewage	96·48	4·066	·987	2·30	0	2·881	16·5	17·12	29·40	46·52
,,	Effluent (a)	64·08	·980	·333	1·20	0	1·321	11·2	·56	·56	1·12
,,	,, (b)	75·36	1·342	·503	1·30	0	1·574	15·1	1·58	·46	2·04
,,	,, (c)	88·76	2·000	·444	1·80	0	1·926	13·6	1·88	1·56	3·44
,,	Limed Sewage from tank after subsidence in Laboratory	95·50	3·887	1·081	1·30	0	2·152	11·6	0	0	0
Town B.	Effluent	178·78	10·847	2·416	·80	0	3·075	7·9	2·34	1·28	3·62
Town C.	Raw Sewage	51·00	1·280	·181	1·30	0	1·252	10·6	23·56	15·16	38·72
,,	Effluent from Settling-tank	45·12	1·629	·311	·52	0	·739	8·2	1·62	·46	2·08
,,	,, after passing over Weir	44·56	1·594	·305	·50	0	·717	8·4	1·64	1·86	3·50
,,	,, after filtration through Coke	39·72	1·059	·273	·50	0	·685	7·2	3·60	2·98	6·58
	Chemical Treatment combined with Application to Land:—										
Town D.	Raw Sewage	75·00	3·253	·501	4·20	0	3·960	9·4	11·88	22·92	34·80
,,	Effluent from tanks	75·00	2·208	·360	3·80	0	3·489	8·7	·98	·68	1·66
,,	,, land	60·40	·959	·159	1·30	0	1·230	6·2	·96	·78	1·74
Town E.	Raw Sewage	104·20	4·134	·700	3·70	0	3·747	21·0	23·20	28·64	51·84
,,	Effluent from tanks	113·32	3·655	·705	2·50	0	2·764	23·8	2·08	1·52	3·60
,,	,, land	80·40	·605	·118	·09	1·548	1·740	11·2	·26	·18	·44
Town F.	Raw Sewage, first day	98·60	4·204	·623	3·00	0	3·094	8·3	10·24	11·76	22·00
,,	Effluent from tanks (treatment with Lime and Sulphate of Alumina; ½ hour's rest)	85·36	2·145	·358	2·30	0	2·252	7·2	1·88	2·12	4·00
,,	Effluent from land	85·28	·906	·180	·05	·820	1·041	7·0	·22	·36	·58
,,	Raw Sewage second day	82·20	3·371	·563	4·30	0	4·104	7·1	6·56	9·52	16·08
,,	Effluent from tanks (treatment with Lime and Carbon; ½ hour's rest)	73·28	1·617	·204	2·50	0	2·263	7·5	2·52	2·48	5·00
,,	Effluent from land	77·00	·937	·275	·005	·611	·890	8·9	·40	·14	·54

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Mr. J. W. Willis-Bund, F.L.S., F.Z.S., read a paper on

Sewage Effluents in Relation to Fish Culture.

It is now generally admitted that by means of well-designed and effective sewage works, it is possible to purify sewage effluents to almost any extent that may be considered desirable; the question of the degree of purity being dependent on the amount expended in respect of the means of purification; as to what the degree of purity should be, doctors disagree. The Rivers' Pollution Commissioners recommended certain standards, which have subsequently been inserted in various of the Bills for the Prevention of River Pollution; but neither Parliament or the public have accepted these standards as the proper test. The prevailing idea seems to be that no specific standard of purity should be required, but that it should vary in accordance with the requirements of the locality; that a very low standard would be sufficient in the case of towns on such rivers as the Aire, Calder, or Irwell, while on a clear-flowing river a much higher standard should be required. No two authorities are, however, agreed in saying what such standard should be. Admitting as a general principle that the standard should vary according to locality, I venture to suggest that, to fully carry out the principle, the standard should be, that the effluent should be purified to such an extent that the effluent will produce no effect upon the fish that frequent the stream into which it flows. The effect on the fish that are found in each river should be the test of purity for each place, it being laid down as a fundamental principle that the effluent should be purified to such an extent that it produced no result on the fish.

At first sight this seems a very small matter, and one that most sanitarians would have no difficulty in agreeing with, but when the details of the matter are considered it will be found to give rise to much wider considerations.

The rivers of the country may be divided into those in which members of the *Salmonidæ* are found, and rivers where they are not. Curiously enough up to the present time, with one exception, all sewage works have been placed on rivers from which *Salmonidæ* are absent. The case of York, which is now under consideration of the Local Government Board, is, I believe, the first case of sewage works on a salmon river. It therefore forms a new departure, and it is with reference to it that the proposal contained in this paper was originally suggested.

It is well known that for a long time past it has been the fashion to say that the effluent from sewers does no injury to fish or fish life, because fish are often seen feeding at the mouths of sewers. It may be admitted that if sewers only discharge a limited quantity of crude sewage in a fresh state into a river, little if any harm is done, but the admission must be made subject to two important qualifications; (1) that the matter discharged is sewage, *i.e.* night soil comparatively fresh, and that no large quantities are allowed to accumulate and putrify in the sewer or near its mouth; and (2) that the fish usually found near sewers and drains or near sewage works are what are usually known as coarse or white fish. With the exception that occasionally an old trout may be found at or near the mouth of a sewer, it is the fact that the *Salmonidæ* do not feed at the entrance to sewers, and are not found there.

It has often been relied on as conclusive proof to show the discharge into rivers from sewers or sewage is harmless, that fish may either be found near the sewer, or that if placed in the effluent they will live in it. The fallacy of the argument lies to some extent in the way the question is stated. Some fish may be found near sewers, some fish may live in the effluent from sewage works; but the deduction made from this—that all fish like sewers and all fish will live in sewage effluents—is a very different proposition.

Speaking broadly, the fish that inhabit the English rivers are divided into two great classes, *Cyprinidæ*, or fish of the Carp family, and *Salmonidæ*, or fish of the Salmon family. The first are the resident in fresh water; the latter comprise the migratory species. The first are far more tenacious of life than the second, and will live and even thrive under circumstances in which the second would die at once. Curiously enough, sewage experiments have been made almost exclusively on members of the *Cyprinidæ*, and usually on fish that are the hardiest and most difficult to kill of that family; and yet, more curiously, the particular fish usually selected for experiment is a fish not indigenous to British waters, but one of the hardiest of all the *Cyprinidæ*, the gold fish. It is difficult to say what amount of impurity a gold fish will not live in. In this country he is never seen in really pure water; the water in glass bowls and aquaria, in which he usually dwells, are certainly not to be classed as standards of purity. Yet it is on this fish that the experiments of the effect of sewage and impure effluents are usually made; not probably with any dishonest intention, but because the gold fish can be bought more cheaply and more easily than almost any other live fish.

It may at once be said that experiments with gold fish, even if most honestly carried out, are worthless for any fish but gold fish; and as gold fish are not found in most British rivers, such experiments are worthless for British rivers.

If, however, the gold fish are laid aside and some other of the *Cyprinidæ* taken—roach, dace, or chub, the experiments have hardly a greater value. Leaving out of consideration the fact that the fish forming the *Cyprinidæ* are comparatively valueless when contrasted with fish forming the *Salmonidæ*, and that it is unfair to estimate the damage likely to occur to all the fish from the damage that will happen to the least valuable sorts. It is equally unfair to take the hardiest and strongest fish to test the effect of a pollution on them, and ignore its effect on the more delicate kinds. The true test is the effect of the effluent on the most delicate fish found in the river, and this will be its effect on the *Salmonidæ*, not on the *Cyprinidæ*. No one with any knowledge of fish life but will admit that *Cyprinidæ* are much hardier and will live under much more unfavourable conditions as to pure water, than the *Salmonidæ*. Carp may be found living in water so thick from impurity that it could almost be cut with a knife. *Salmonidæ* will only live in water that is practically pure. A practical instance of this is seen from the fact that the keepers of aquaria always select *Cyprinidæ*, and not *Salmonidæ*, for the purpose of stocking aquaria.

So far as I am aware, no data have been published giving the result of reliable experiments on different kinds of fish with the same polluted water. As far as my limited experiments go, I should classify our *Cyprinidæ* in this way: the hardiest are carp and tench, the rest in this order, namely, roach, chub, dace, bleak, gudgeon, minnow. In rivers that contain only *Cyprinidæ*, the test of the effect of an effluent from sewage works, would be what effect would it produce on the above fish in the reverse order—beginning with a minnow, if minnows are found in the river, and finishing with a carp; not beginning with a carp and finishing with a minnow. It would be necessary to ascertain precisely the different kinds of fish inhabiting each stream, and then the effect on each kind might be ascertained; not merely by ascertaining if they would live in the effluent, an experiment of very small value, but how far the effluent affected the fish as to their breeding, their size, and their food. Hitherto the idea has been does the effluent kill or not. But this is not the real question. Killing is only one of the ways in which pollution affects fish: their breeding is affected by the deposit on the spawning-beds, their size from the lack of food or the unwholesome food they get, their food by the destruction of the various forms of life that they feed on. In a stream I am acquainted with, the effect of a pollution from a mine is not to kill the fish, they are as plentiful as ever, but to cause a great decrease in quality, size, and condition; a fact I put down to the diminution of some item of the food supply, or its general destruction.

If injury to fish is taken as the test, and taken in the way I have ventured to point out, it will make a minute study, far more minute than any we have yet had of the

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forms of life in our rivers, absolutely essential before any standard of purity can be fixed upon.

Hitherto, the rivers on which sewage works have been erected, have either had no fish at all in them, or have had the hardiest members of the *Cyprinidæ*. In this class of rivers it would be unfair to compel the local authorities to give such a standard of purity to the effluent as was not required by the facts of the case; and on any class of rivers it might well be that the local authorities should not be asked to create a purer effluent than is necessary for the fish now inhabiting the stream, and should not be bound to consider the fish that might be introduced into the stream when it became pure. Conceding this, the tests as to our rivers would be two: (1) for those containing no fish; (2) for those containing fish, and this last would be subdivided as to rivers containing *Cyprinidæ* and *Salmonidæ*.

I have left the salmon rivers to the last, because in these a new set of considerations quite distinct from those affecting other streams arise. As is well-known in salmon rivers, unless the anadromous *Salmonidæ* have a free passage to the upper waters from the sea, the rivers are rapidly destroyed as salmon rivers—quite as effectually as if the fish were actually killed. Experience has shown that a river may be very highly polluted, but still salmon will pass up if the pollution is diluted with a large body of water; and as salmon usually only run up our rivers in floods, many of them then pass through the pollution. But experience has also shown that if the pollution is concentrated, the salmon will not face it; so, although an effluent from sewage works may be such that it will not actually kill salmon, yet it will just as effectually destroy the river if salmon will not pass it, for they will have to spawn in unsuitable places, and so gradually become extinct. This is the great danger that has to be feared from sewage works on salmon streams. The whole of the sewage will be discharged within very narrow limits; and the great question will be whether the effect of that discharge will not prevent salmon ascending the stream. I can call to mind certain chemical works on a tidal river that discharge, once a week, certain refuse into the river; the effect of this discharge is that the fish ascending below the works at once drop back. The fear is that a similar result will follow from sewage works, not that salmon or fish will be killed outright, but that they will be deterred from passing up the river to breed.

The test suggested that the effluent from sewage works should cause no injury to fish, thus opens out far wider considerations than at first sight appeared. Hitherto the matter has not received the consideration that it deserves from the hands of experts. It has been thought quite enough to say—fish are not killed. For the future it is to be hoped such a test will not be considered sufficient, and the whole circumstances of the river and locality will be taken into account. I venture to think that some of the societies who are interested in the question of river pollution would be doing most useful work if they prepared a classified list of the rivers of England and Wales, showing the different fish that inhabit them and the necessary standard of purity required. Such a classification would be somewhat as follows:—

Class A. Rivers not containing fish.
,, B. Rivers containing coarse fish, *Cyprinidæ* only.
,, C. Rivers containing coarse fish, *Cyprinidæ* and non-migratory *Salmonidæ*.
,, D. Rivers containing migratory *Salmonidæ*.

For each class a minimum standard of purity should be agreed upon, and the Local Government Board, if possible, should be induced not to sanction any scheme for sewage works on rivers the effluent from which did not come within the agreed standard.

County councils have now some powers in the matter of river pollution. It would not be asking too much of those bodies to prepare such a classified list of the streams in their districts, and agree on the standard of purity for each class in their district. If this were done throughout the country, some progress would be made in the question of the prevention of pollution of rivers.

Mr. Charles R. C. Tichborne, LL.D., F.I.C., L.A.H.I., &c., read the following paper on

Interception of Miasmatic Emanations from the Subsoil of Dwellings.

Some little attention has been given, within the last few years, to the subject of basement floors, but chiefly in isolated cases, where scientific men have personally superintended the construction of their own houses. Wherever trouble has been expended it has been attended with the best results. I state this not from hearsay but from personal knowledge.

In approaching upon a scientific basis the subject of the concreting of basement floors, the following question at once presents itself to our minds: What is the actual extent to which cement will prevent the passage of miasmatic, or deleterious vapours. Deleterious vapours may be divided into two distinct classes: 1st, the permanent gaseous poisons, such as sulphuretted hydrogen; 2nd, organisms such as microbes, baccilli, &c. Where the 1st class ends and the 2nd commences it will require the bacteriologists of the next century to define, and for our purposes it will be as well to consider them as distinct forms of matter. First, then, to consider the question of porosity, or, in other words, how far are these different cements capable of passing gases. This point is roughly but efficiently determined by the following simple experiment, or series of experiments:—

Thin tubes were taken a foot long and ¼ of an inch internal diameter. These were carefully plugged with the cements to be tried, an exact inch of each cement being set in the ends of the tubes. Some of these tubes were allowed to stand four months before being used, so as to get perfectly set. The following materials were used as being typical:—No. 1, fine mortar, made by adding one part quicklime to two of sand; No. 2, plaster of paris, or anhydrous gypsum; No. 3, Roman cement; No. 4, Portland cement; No. 5, hygienic cement.

This last is a cement with which we have obtained some very successful results in Dublin, and many of the tests given further on prove that it is specially applicable to basement floors. The specimen experimented with contained about 5 per cent. of carbolate of calcium, naphthaline, &c.

These different tubes were air dried; each tube was then closed at the end by an india-rubber cap, which could be removed at will. They were then filled with mercury and inverted in a mercurial trough, so that a torricellium vacuum was formed in each tube. The caps were then removed, and by observing the order in the fall of mercury, the relative porosity could be determined. It stood in the following order:—

	Relative amount of Porosity.
1. Mortar - - - - -	100
2. Plaster of Paris - - - -	75
3. Roman Cement - - - -	25
4. Portland Cement - - - -	10
5. Hygienic Cement - - - -	10 or 8

Their relative position as regards porosity could be determined with certainty; but in the second column is an endeavour to give the relative amount of porosity. This last column, although it conveys a very good idea, is only rough approximation. It was arrived at by performing a number of experiments, and noting the respective times the mercury took to fall. Even if elaborate apparatus had been constructed to arrive at these results with great precision, such precise experiment would be of little use, as hardly two samples of similar kinds of cement would agree to a nicety.

The fall of a foot of mercury, in the case of mortar, is called one hundred, because it is the most porous material—in fact it is almost instantaneous, and lasts about half a second. It can just be followed with the eye. The Portland cement is extremely slow, the last inch of mercury taking nearly a quarter of an hour.

A series of experiments were then performed with similar tubes, to determine the rate of diffusion of gas through these different materials. These experiments are confirmatory, but yet in a degree are distinct from the previous ones in their bearing. In such experiments we are drawing important inferences as to how layers of these different kinds of materials would influence what has been aptly called the "ground respiration." Any gas that may pass through such septums or layers of cement, will obey Graham's law of diffusion, viz. :—That the rate of diffusion is in inverse ratio to square root of their gravity. Hydrogen was the gas selected to try against atmospheric air. The tubes were again capped with india-rubber, and were filled by displacement with hydrogen gas. They were then inserted in a trough of water, and the caps were removed. A partial vacuum was created in each experiment, which raised the level of the water in each tube according to the respective rate of the diffusing hydrogen, which, as it was the lighter gas, passed through more rapidly than the atmospheric air passed in.

The relative heights of the column of water, above the level in the trough, is given according to the time observed.

	1 Min. Inch.	3 Mins. Inch.	15 Mins. Inch.	20 Mins. Inch.	30 Mins. Inch.
Lime Mortar -	$\frac{1}{4}$	$\frac{5}{16}$	0	0	0
Plaster of Paris -	$\frac{1}{4}$	1	$2\frac{1}{4}$	$2\frac{1}{16}$	0
Roman Cement -	$\frac{1}{4}$	$1\frac{1}{4}$	2	$2\frac{3}{16}$	1
Portland Cement	$\frac{3}{16}$	1	$1\frac{1}{4}$	$3\frac{1}{4}$	$3\frac{1}{4}$
Hygienic Cement	$\frac{1}{4}$	$1\frac{1}{4}$	$1\frac{1}{16}$	$2\frac{1}{16}$	$2\frac{5}{16}$

It will be observed that lime mortar is hardly worthy of being called a septum, and is practically without any controlling action upon gases—in fact, under such circumstances, it should be viewed merely as a coarse sieve. It could not exert any control over ground respiration. In the case of the cements it is very perfect, but necessarily slow. The practical reading to my mind is that any ground gas would pass through such materials, as the hygienic cement, very slowly, if at all, because the atmosphere being of a lighter density than such gas as sulphuretted hydrogen, or carbonic acid gas, a downward diffusion would take place, or we may put it that a ground respiration would be set up, and that atmospheric oxygen would be carried into the surface soil. The atmospheric oxygen would oxidize the noxious organic matter exactly on the same principle as it destroys the pollution of rivers—if we only keep the organic matter in a sufficient state of attenuation.

So far we have merely treated the question of gaseous diffusion, but it is probable that the most important part of the investigation is the action of cements on the germ contamination. Tyndall has pointed out that plaster of paris, and even a surface of strong sulphuric acid, is incapable of separating germs. In fact, the only filter which he found successful was cotton wool. This observation has been thoroughly indorsed and made use of by subsequent workers in bacteriology. Now to determine the action of cements in separating germs, a series of Pasteur's retorts or flasks were filled with sterilized hay-infusion, and were then plugged with different cements. The retorts, contents, and plugs were all sterilized at a temperature of 212 for some days. On being closed they were placed in an incubator. In a short time all of these solutions went with the exception of the hygienic cement—one which is perfect still.* It is also interesting to observe that the next best flask is the plain Portland cement. There is only one conclusion to arrive at, that the air in passing through this inch of hygienic cement was perfectly sterilized.

Asphalte acts as a perfect plug, but I should say that it is objectionable; because if we have every large area cemented by this material, the surface gases will be more or less under pressure, and if so will force their way through any of the numerous cracks and fissures which must exist in an ordinary house; besides this, it will largely permeate up the walls which we now see are formed of very porous material.

As regards the permanency of the antiseptic action of hygienic cement, I may give the analysis of a sample of concrete made with it and laid down in Gray's Inn Road in 1885. It was taken up in 1889, and gave on analysis:—

Moisture	3·00
Antiseptic matter of an extractive nature ...	1·96
Carbolic acid	0·14
Granite with cement	94·90
	100·00

When broken it smelt strongly of the antiseptic used.

I believe that these experiments throw considerable light upon the question of atmospheric contamination from the basement of houses.

Surgeon W. J. BLACK read a paper on

METEOROLOGY AT THE SEA-SIDE,

in which he gave the results of some observations taken at Brighton, Hastings, Havre, and Boulogne in summer and autumn. He found that ozone was more prevalent in the morning than in the afternoon observations at the sea-side, except in quiet settled weather: for the rest, he came to the conclusion that the sea-side is healthier than the city, and that visitors gain the benefit of more ozone, more breezes, more showers, more sun and air, less heat, less calms, less smoke, less miasmata. He therefore considers that the custom of going to the sea-side is quite justifiable.

Mr. C. C. WALKER contributed a paper on

BATHS FOR THE PEOPLE,

showing that excellent baths can be put up and made self-supporting in connection with any works where steam is used. It may be stated generally (he observed) that public baths often do not pay their expenses. What with the interest on cost of construction, and the expenses of maintaining them, they seldom "pay." In Birmingham, for example, the interest on cost of construction and expenses in working amount over receipts to about ½d. in the pound on the rates; and in many other large towns a similar condition of things exist. Valuable as are the results for this addition to the rates, it is not to be expected that the ratepayers will bear a further increase, to make up the loss from a further lowering of prices to meet the wants of the labouring class. The bath described by Mr. Walker, complete in itself, with washing and drying apparatus, costs £245 to £250. Such a bathing establishment would supply the needs of a town of 12,000 inhabitants with ease. So moderate is the cost of construction and the expense of working, that if a person brought his own towel and soap, one halfpenny might be charged for the bath, and there seemed no reason why these baths should not return a moderate interest on their cost, instead of being a loss, as public baths generally are. But the building must not resemble a cathedral in style of architecture, nor a mansion as to appointments.

Mr. H. D. MATHIAS, R.P.C., of the Liverpool School of Science, read the following paper on

THE TECHNICAL EDUCATION OF PLUMBERS.

The plumber, like workmen of many other trades, has been slow in advancing with the times.

There is not much to complain of in the actual work of the genuine plumber, it is the *ideas* which have been most often at fault. During the last twenty years new ideas have been conceived with regard to plumbers' work. It should not for one moment be denied that the craft of sanitary plumbing has been greatly improved by professional men, whether in private or public practice, but there is much work done by the houseowners voluntarily and without the assistance of a trained superintendent. It is in this case that the services of a theoretical plumber are required, so that the health of the inmates of dwellings may not be endangered by good or bad work done on alterations. The term good work used here may seem out of place, but it is used advisedly, as work has been

* September 19, 1889. Three weeks old.

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and is continually found, strong enough to have formed part of a mediæval castle, just as wrong in idea as it is possible to conceive.

Happily the movement for the Registration of Plumbers is clearing away much of the opposition to their technical education, but even when that has succumbed all will not be plain sailing to those engaged in teaching. It will readily be granted that this training is desirable not only for the few who may become masters and overseers of the craft. The responsibility of plumbers' work is too great for that; the lowliest hand may make an error which eventually will cost a life. Success in practical plumbing depends wholly on detail, and in theoretical plumbing the greatest pains are taken to impress this upon the young man's mind. For instance, in pipe work, the more important part is the inside, while the outside only can be seen, and the plumber who has not had a theoretical training is apt to allow a spur or two inside by burning through, in making several attempts at his joint in order to please the eye, really detracting from the usefulness of his work for appearance sake.

All plumbing is sanitary work, though indirectly in some cases; "Fire and water are good servants, but bad masters," an old saying teaches. The plumber should know something of the properties of each, so that he may assist in keeping them in their relative positions. His work is essentially one of water carriage, and whatever he may be engaged in, he is to prevent water obtaining the mastery; and as this should be more widely recognized, much stress is laid upon the truth of the old assertion in teaching plumbing. The interpretation generally accepted with regard to water is, that it is a bad master when it takes the form of a deluge, when it bursts through the dam of a reservoir, or when in the form of rain it wets one through to the skin; but our special office is to add that water can be a dangerous master in a more insidious way, and, therefore, the smallest details of our work must be thoroughly prepared. Such a seemingly small matter as a leaking gutter causes a damp sleeping-room wall, and is responsible for defective ventilation and an impure atmosphere; a slight leakage from a defective drain-joint, or from a water-main underground, has also its deleterious effects on health; and we explain these facts and many others like to our young students, for it is not sufficient for us to say that substantial work is best, we must prove it.

Much unnecessary expense will also be avoided when each plumber knows the laws of water pressure and of heat, so that the materials best suited to the work may be used at the various parts of a building.

The plumber has been subject to too much blame and ridicule. Until very recently the public have had no means of knowing the genuine plumber from the one who is one only because he would like to be, self-styled, but with no experience except that of charging. Much good substantial work has been spoiled and rendered dangerous to health by so-called sanitary engineers, who do work in a manner that would not be countenanced by a plumber. It is a fact that many men whose servitude only entitles them to use the spade have dared to call themselves plumbers, to the disadvantage of the unsuspecting and generous public.

In order that usurious profits and scamped work may be overcome, only registered plumbers should be employed; and though there may be a few defects in the system, this is the best guarantee a patron can have, and, as time goes on, the registration certificate will be more valuable than ever as a warrant that the tradesman has shown himself capable before a committee of his fellow craftsmen and the public by written and practical proof. It is to this desirable end that technical classes in plumbers' work are held, and there should be no doubt that good health and true economy are furthered by all who assist in this good work.

Mr. Charles Cassal read a paper on

The Law as it regards Adulteration,

in which he urged the advisability of extending the law as to adulteration. Commercial morality, to-day, he said, was no better than it was twenty-five years ago, when Special Commissions revealed monstrous adulterations. Local authorities ought to be keener in the matter of securing analyses; they now spend plenty of money on legal squabbles, but decline to take means to prevent the public from being cheated. During last year only one sample was analyzed to every 596 persons; in the provinces only one to every 1,225 persons; in 3 counties and 72 boroughs no samples were analyzed. The public analyist should be expected to deal with gas and water as well as with food. At the present time the public were cheated as well as poisoned by patent medicines, quack nostrums, dyes, cosmetics, so-called disinfectants, paints and dyes on children's toys, &c. An extension of public analysis would necessarily mean a more widespread control over the trade morality of a country.

Mr. Richard F. Grantham, M.Inst.C.E., contributed the following paper on

Water Supply.

The subject of water supply has been so frequently and exhaustively treated, particularly of late years, as to make it difficult, wide as the subject is, to find new matter, or to throw much new light upon any of its branches.

Year by year, however, fresh experience is gained, and I apprehend it is one of the objects of the Institute, not only to note progress in all matters which tend to improve the public health and welfare, but also by reiteration of general principles to accustom the public to discriminate among the various suggestions brought before them—notably those for obtaining a wholesome supply of water.

The danger to the public health of a supply of contaminated water has been dilated upon again and again, and the annual reports of the medical officers of health of the Local Government Board abound with instances of it, so that no further reference is needed here.

The tendency of the population of the country to move towards the towns, and the consequent rapid increase of the already densely-populated quarters of towns, enhances the responsibility of those who are charged with the duty of supplying wholesome water, especially as new sewerage works, particularly in their connection with the houses which the growth of towns makes necessary, may become, without great precautions, means of contamination of the water, to say nothing of the chances of pollution at its source.

It may, then, be as well to note what has been done, and what is being done, in some of the larger towns towards providing wholesome water, and to refer briefly to the systems and methods which are most efficient in affording a good and sufficient supply.

The Rivers Pollution Commissioners declared that "of the different varieties of potable water, the best for dietetic purposes are spring and deep well waters. They contain the smallest proportion of organic matter, and are almost always bright, sparkling, palatable, and wholesome, whilst their uniformity of temperature throughout the year renders them cool and refreshing in summer, and prevents them from freezing readily in winter. Such waters are of inestimable value to communities, and their conservation and utilization are worthy of the greatest efforts of those who have the public health under their charge."

The geological formations which in this country yield the largest supplies of deep well water, are the new red sandstone, the oolites, and the chalk.

Now, it is almost unnecessary to point out that the largest towns in the kingdom are dependent, to some extent, upon water drawn from deep wells. London, Liverpool, and Birmingham derives each of them a portion of its supply from deep wells, the former from those in the chalk, and the two latter from those in the new red sandstone.

In the case of London, the proportion drawn from deep wells and springs varies from about 13 to 15 per cent. of the whole supply. Liverpool and Birmingham have hitherto

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depended still more largely upon deep well water. Thus Liverpool, with a population of over 600,000, at one time derived 6,250,000 gallons per day from deep wells, out of a total of nearly 18,000,000 gallons, the remainder being obtained from gravitation works, consisting of seven catchment reservoirs, with a storage capacity of 4,059,000,000 gallons. The supply, however, has been found insufficient, and the drought of 1887 was severely felt.

Birmingham, in 1885, with a population of about 500,000, was supplied from deep wells in the new red sandstone at the rate of 9,000,000 gallons per day, and from streams at the rate of 7,500,000 gallons. The storage capacity amounted to 617,761,913 gallons, equivalent to 10,000,000 gallons per day for 60 days in addition to the daily supply.

Birkenhead, with a population of about 45,500, derives an ample supply from deep wells, also in the new red sandstone.

From the same formation, the South Staffordshire Water Works, which supply an area of about 40 miles in length between Stourbridge and Repton, and about 12 miles in breadth at Lichfield, obtained, in 1869, 10,000,000 gallons daily, and this was increased to 24,000,000 by driving a tunnel into the keuper sandstone, and marls and pebble beds.

Croydon, Surrey, with a population of nearly 100,000, is supplied with water of excellent quality from wells and headings in the chalk; and Portsmouth, with a present population of 150,000, has just got supplied at constant high pressure with 5,000,000 gallons per day from springs in the chalk. Other districts are drawing large and unfailing supplies from deep wells in the same formation.

Large volumes of water are also to be found in the oolites, from which, for example, Peterborough, Northampton, Scarborough, and Cirencester draw their supplies.

These instances, which may be taken as typical, show that while for the largest towns these sources alone are inadequate, for towns of more moderate size they yield an unfailing supply independently of dry seasons.

Experience of late years has shown that supplies from such water-bearing strata as the new red sandstone and the chalk can be better supplemented and increased by the extension of headings, or adits driven horizontally below the water level, than as was formerly the practice by deepening wells or bore-holes. By driving headings into the water-bearing strata the area of collection of the water is increased in proportion to the length of the headings. Percolation of the water through chalk being along fissures and crevices in the rock, great care should be taken that no pollution is allowed to take place on the surface of the ground below which the water is drawn.

The boring of deep wells has been much facilitated and the cost reduced, by the recent introduction of boring tools of large diameter. Thus, in the new works in the chalk whence Southampton is supplied, tools were employed which bored two wells, each 6 feet in diameter.

But it must be borne in mind that water taken from deep wells, in a permeable district, is so much water abstracted from the sources of neighbouring streams. Schemes have been propounded by which the underground stores of water might be replenished by the admission of the surplus or flood-waters of rivers into "swallow" or "sump" holes, or "dumb" wells sunk into the water level below; but the recovery of the water at the particular locality in which it may be required can scarcely be depended upon, and this, coupled with the disadvantage of pumping up again water which might have been collected and stored on the surface, make it difficult to see at present what practical benefit could be derived.

Comparing the various sources of supply in respect of quantity, we know that reservoirs fed from gathering grounds must have very ample storage capacity to provide against long droughts. Liverpool, which has hitherto been largely supplied, and Manchester and Sheffield, which have been entirely supplied from this source, felt the drought of 1887 severely. The magnitude of the new works designed for the two former towns show what large provision is felt to be necessary for the wants of the rapidly-increasing populations. Thus, the storage (available for Liverpool) at Lake Vyrnwy will be about 12,000 million gallons; the present population being 814,873, and the consumption during the year 1887 twenty-three gallons per head. The storage at Thirlmere (for Manchester) when the lake is raised fifty feet, will be 8,130,686,693 gallons; the present population being about 1,000,000, and the present consumption about twenty gallons per head. Deep wells, although alone within a circumscribed district insufficient for the largest towns, are certainly sufficient for towns of populations, say, of 100,000 or 150,000, and supplies from rivers—taking London and Worcester as examples—do not anyhow fail during dry seasons, whatever their liability to pollution.

Upon this point, with reference to London, it is interesting to turn to the reports of the water examiner. In November 1884, the late Colonel Sir Francis Bolton remarked that at that time, after two dry winters and a spring of unusual drought, there were about 410,000,000 gallons passing over Teddington Weir. Adding 80,000,000 at present abstracted by the companies, the quantity at Teddington would be 495,000,000, that is, the companies are taking less than one-sixth of the minimum flowing volume. Unfounded statements appear to have been made at that time that the Thames showed signs of exhaustion; but, he adds, "the fact is there is no question of present exhaustion; but in future times, when more than double the present quantities is required, it will probably become necessary to store in some of the valleys sufficient of the winter or flood waters to give out in compensation during the dry months."

I may remark here that Worcester, with a population of 40,000, is now pumping 1,250,000 gallons per day from the Severn, which, even in the longest drought, yields an unfailing supply.

Later on, in September 1887, the present Water Examiner of London, General de Courcy Scott, reports as follows:—"The extension of the deep well and adit system of supply within the Thames and Lee basins is much to be desired, as the water derived from the chalk by such waterworks is of the highest quality, and efforts in this direction on the part of the companies cannot but be viewed with much satisfaction. . . . A marked feature of river supplies is the very large increase of impurities, both suspended and in solution, which results when the rivers are in flood. Water taken from the underground sources, whether from the gravel already referred to, or from deep wells, is free from this defect."

Now let us turn, by way of example, to the statistics of the population of London, the quantity of water used, and the means which in many places have been adopted to prevent waste.

The population of London supplied by the different water companies is, according to the June Report of the Water Examiner, about 5,575,507, and the daily quantity of water varied from about 153,617,000 gallons, or 27·76 gallons per head in December 1888, to 180,878,000 gallons in June 1889, or 32·44 gallons per head.

In many towns much waste of late years has been prevented by careful supervision, repair of fittings, and the adoption of the waste water meter system.

I have tabulated the results of these improvements in some towns as reported from time to time by the Managers, Secretaries, and Engineers of the various Water Companies or Corporations.

Name of Town.	Quantity of water used before adoption of system per head per day Gallons.	Quantity used after adoption of system per head per day. Gallons.	Total reduction per head per day. Gallons.
Carlisle	40	23·50	16·50
Lambeth W. W., London	34	20	14·00
Gloucester	31	17	14·00
Bath	43·7	22	21·70
Clevedon	37	23	14·00
Abergavenny	37	21	16·00
Newport	35	19·50	15·50
Birkenhead	35	15·48	19·52

Or more than 33 per cent. on the whole.

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There are some towns, however, in which it has been considered that the first cost of adopting a system of preventing waste would be greater than the saving effected by it.

I do not say whether or not the system is practicable throughout London, although it has been adopted with advantage by the Lambeth Water Works, the New River, the East London Water Works, and other London companies; but the large figures applicable to London are useful as a very striking illustration of the immense importance of the saving to be thereby effected. Thus, if the supply per head per day could be reduced from 30 gallons, taking that as the average, to, say, 20 gallons, there would, of course, be a saving of about 55,755,100 gallons per day.

The proportions of the daily supply used for various purposes at Liverpool and Manchester respectively are, of the 23 gallons for Liverpool:—

⅓ for domestic purposes.
⅓ for trade purposes.
⅓ waste (this latter is inevitable).

Of the 20 gallons at Manchester:—

13 gallons for domestic purposes.
7 gallons for trade.

The supply of water by meter is frequently advocated as a means of checking waste; but the detriment it is likely to cause to the public health, when applied for domestic purposes, by inducing people—particularly of the poorest classes—to use it as little as possible, outweighs, I think, any advantage it might offer in other respects. But for trade purposes it appears to be the most just and reasonable method; and according to the recent case of Cooke, Sons & Co. *v.* the New River Company, the rights of owners to demand such a measurement of water when used solely for business purposes have been established.

In some maritime towns attention has been drawn to the use of sea-water for watering streets and flushing sewers as a means of saving the cost of obtaining the best water for such purposes. In a paper read by Mr. S. H. Terry, of the Local Government Board, before the Civil and Mechanical Engineers' Society, it appears that several surveyors of those towns pronounce salt water to be the best for watering streets. The East London Water Works have for some time used unfiltered water for such purposes, although it involves separate main pipes.

Where towns use river water for all purposes, the efficacy of the system of filtration is of course of the highest importance. An advance has been made of late years in the means of testing it by the method of biological examination, which has so largely engaged the attention of Dr. Percy Frankland. General Scott shows by his Report of December last how much he values the bacteriological test, which for sanitary purposes he considers the more sensitive and delicate one.

Chemists appear to be agreed that sand filtration is the most efficacious, as it is the least costly method of purification on a large scale. The conditions under which the removal and destruction of micro-organisms are facilitated, are an enlarged storage capacity, a sufficient thickness of sand, a slow rate of filtration—one according to the practice of the London Water Companies—not exceeding 540 gallons through each square yard of sand in 24 hours, and a frequent removal of the filtering medium.

Prominence, however, must be given to Mr. William Anderson's experiments on the filtration of the impure water of the River Nethe for the supply of Antwerp. The first attempts were with a certain thickness of sand, and below this a mixture of spongy iron and gravel. The action of the iron was thoroughly effectual, but it was found the filters became so quickly c ogged, that only a part of the water would filter through, and so the labour of cleansing the filter was seriously increased. Mr. Anderson subsequently devised revolving cylinders charged with scrap iron, and so arranged that the water passing through them was brought into contact with every particle of iron.

With regard to the general question of obtaining a sufficient supply of wholesome water, there is a tendency of the largest towns to look to lakes as the best and most unfailing sources. Two schemes of such a character, for the supply of London, were brought before the Royal Commission on Water Supply in 1866, but it objected that though there was no doubt the lake districts were a very fine gathering ground for soft water, these districts were not unlikely to be claimed as the most natural source of supply for large and increasing manufacturing populations in the north of England, for whom soft water would be particularly valuable; and so far as Manchester is concerned this opinion seems to have been prophetic.

For smaller towns not situate on water-bearing strata, it is unfortunate that in so many cases the rivers, which, after all, are to a large extent fed by the overflow from underground waters, and which, as we have seen, generally yield unfailing quantities, should be rendered unfit by the pollution which is now allowed to exist. If only this pollution could be stopped, or at any rate minimized, and improvements made in filtration, we might, in many cases, look to the rivers as furnishing sufficiently wholesome supplies.

Mr. R. Godfrey, F.S.I., Assoc.M.Inst.C.E., read the following paper on

The "Amines Process" of Sewage Treatment.

Having to contend with the sewage of a couple of villages, in one of which there is a large paper mill, making about sixty tons of paper per week from the coarsest material, I have been for some time looking for a satisfactory solution of the sewage problem, how to avoid an action for polluting a stream, and, at the same time, to assist the manufacturer, and by so doing benefit the district in which I am engaged.

In my inquiries I came across the sewage works at Wimbledon, where a very good system of purification by the lime process was in action under a careful and observant engineer.

The machinery and plant is of a very good type, and a farm is well laid out for irrigation by the effluent.

At the time of my first visit, I found that the works were, by permission of the Local Board, for a time in the hands of a syndicate, which professes to have found out the grand secret. The normal treatment, as adopted by the Wimbledon Local Board, was suspended, and the "Amines" Syndicate were carrying out a practical demonstration of their system. A new reagent has been discovered, which so far seems to have more than answered the expectations formed of it.

The requirements of a satisfactory process of dealing with sewage are—

1. A harmless effluent.
2. A harmless liquor from the sludge presses where pressing is adopted.
3. A minimum amount of sludge.

An effluent to be harmless must not only be sufficiently pure that it may be applied to land for irrigation without causing offence, but it ought to be so pure that it may be at once turned into a river, containing at least ten volumes of water to one of effluent without the need of irrigation, and to render it so pure it must be deprived of all living organized matter, as well as the matters held in solution. This, to the eye of the ordinary observer, may appear easy, but to the searching powers of the microscope, in the hands of a careful observer, our purest waters display some of the lowest forms of organic life; how much more, therefore, may it be found that effluents from sewage works, alleged to be harmless, are teeming with life in its most dreaded form, viz. the various bacteria, the typhoid, and pneumonia bacillus, and others. Until we arrive at this degree of purity we must not cease in our endeavours to solve the problem.

The sludge question is the most serious of any in the management of a sewage farm, and any process which materially increases its weight must be shunned, unless it

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has some overwhelming advantages *per contra*. Sanitarians must not dwell too largely on the profit side of sludge manipulation. Sludge is matter in the wrong place, and must be got rid of at any cost. If it can be utilised, so much the better; but when we find cities making 500 cube yards a day, it is enough to appal the senses. How and where is all this sludge to be disposed of? Land on which to utilize it is not always available, and in my opinion cremation will have to be resorted to, unless its quantity can be materially reduced.

In dealing with the sludge by pressing, in one of the various types of press now before the engineer, a difficulty is sometimes felt in disposing of what is technically termed "Press Liquor." To satisfy the requirements of the case this must be of equal purity with effluent, and unless it is so our assent to any scheme as perfect must be withheld.

With my mind in a thoroughly sceptical condition, my visit to Wimbledon, on August 17 last, enabled me to examine minutely, how far the three requirements before named were met. And I am bound to say that, as far as the first requirement it is concerned, I was most agreeably surprised. I saw at one stage of my examination of the works, the ordinary effluent flowing on to the land. It presented the usual cloudy appearance as it boiled out of the chamber; the bottom of the chamber was not visible, and it differed in no respect from the many effluents which are distributed over grass land, and was totally unfit to be sent direct into a river.

A large subsiding tank of about 90,000 gallons was being filled with the sewage from Wimbledon, and as it passed into the carriers a supply of milk of lime was being mixed with it; and, here comes the difference—a small quantity of herring brine. All the additional plant required was a small tub against the lime-mixer, from which the lime flowed in a fixed proportion. A complete mixing took place at the tank inlet by aid of a dashwheel driven by the inflowing current. As the tank filled, the disturbance of the volume of sewage was gradually confined to the centre, where the course of the incoming stream could be distinctly traced, while near the sides the process of precipitation could be seen in operation even before the tank was full.

The solids in the sewage were gradually aggregated into flocculent particles, and on the supply of sewage being cut off, the whole tank's contents assuming a state of quiescence, the work of precipitation proceeded with a rapidity which was noteworthy.

The tank was six feet deep, provided with a floating mouthpiece to draw off the supernatant liquid, and this was sent, after half an hour's precipitation, at once to the irrigation area through the same chamber as that from which I had seen the normal effluent some little time previously. The contrast was striking. The effluent was clear enough to allow the bottom of the chamber to be seen, and all trace of smell was gone. The briny smell caused by the introduction of the reagent was particularly noticeable. I took a sample, which is now before you.

The press liquor obtained from the same sludge is equally brilliant and briny. There was a complete absence of that sickly fœtid smell which too frequently pervades sewage works, under the most careful management.

It is claimed by the inventor of the Amines process—and I am bound to confess with very great reason—that he does effectually destroy the bacterias, and so remove in the sewage the possibility of any fermentation arising.

The new reagent is produced by the action of lime on certain organic bases belonging to the group of "Amines," or ammonia compounds. When these organic bases are acted upon by lime a very soluble gas is evolved, which spreads rapidly through every part of the liquid and is held in solution therein with great tenacity. This gaseous reagent has been found to be antagonistic to the existence and propagation of every species of bacteria occurring in sewage and other similar waters, for it utterly extirpates them in a remarkably short space of time.

The effluent from such water after treatment by this process is actually sterilised; it shows no living micro-organisms whatever, even under the most powerful microscope, and its sterility is further confirmed by the latest and most severe test known to modern science, viz. inoculation on nutrient gelatine and plate cultivation.

In support of this statement, which cannot but arouse the greatest interest in the sanitary world, I cannot do better than quote from a report by Dr. Klein (who has just been honoured by the British Medical Association with the Stewart Award). He examined some sewage—press liquor, sludge, and subsidence effluent—taken from the sewage works at Canning Town, where an application had been made in January this year. In the sewage he found 2,400,000 organisms; in the press liquor he found 650; in the sludge 400; and in the effluent none. The quantity examined being in each case 1 cubic centimetre.

"This number of bacteria found in the press liquor and sludge is far below that found in ordinary drinking water, such as the water supplied by the various London Water Companies after this has been stored for a few days, and in some cases even the day after collection."

Dr. Frankland (*Proc. R. S.*, No. 245, vol. xl., p. 51) has found that the filtered river water supplied by the London Water companies contained per cubic centimetre on an average (on January 26th, 1886) 1,525 organisms.

In July of this year Dr. Klein again reported, but this time on a sample from Wimbledon, when the sewage was being similarly treated. In the crude sewage he found 768,000 microbes per cubic centimetre; in the mixture effluent and sludge well shaken up 100 microbes; and in the effluent which was subjected to the gelatine plate test for three periods, viz. 24 hours, 72 hours, and 144 hours, there was a total absence of microbes. And he further says, "the effluent must be pronounced sterile;" thus pointing to the fact that a process had been discovered which satisfies two of the requirements set out at the beginning of the paper, viz. a harmless effluent and a harmless press liquor, both devoid of microbes, and both fit to turn into a river, as on its discharge into a river it could cause no increase in the microbes already present in such river.

As a natural consequence of the sterilising action of this reagent, decomposition of organic matter, whether incipient or far progressed, and the objectionable phenomena of putrefaction attendant on such decomposition are completely arrested, and even new infection cannot beget fresh putrefaction as long as there is a sufficiency of the gas remaining in solution. In elaborate and repeated tests made by the Government analysts at Somerset House, upon samples of effluents from various experiments carried out with this process on Metropolitan outfall sewage (the quantities treated aggregating half a million gallons), the sterility of the effluent, and also its immunity from new infection, has been conclusively proved, the samples having been kept for four weeks in contact with air, at a temperature of between 70° and 80° F., with occasional exposure to the direct action of the sun's rays.

The "Amines," from which the process is named, exist in many substances in nature. And herring brine is one only of the many sources from which they can be obtained. They are used either pure or in the form of Amine salts, or in one of the numerous substances containing them. But at present the brine is the cheapest and most readily procurable form in which it can be obtained. The reagent formed by its admixture with "milk of lime," and which the inventor has named "Aminol," is a powerful disinfectant, and imparts a sea-breezy odour to the works in contrast to the usual fœtid effluvia.

The proportions of the chemicals, added to the sewage, will vary with the character of the sewage, and with the attending conditions. The cost is stated by the Syndicate, in round numbers, to be from ½d. to ¾d. per 1,000 gallons treated.

Having satisfied two of the requirements set forth, there remains the question of the sludge and its disposal.

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This is devoid of offensive smell, and permeated with Aminol to such a degree that the inventors claim that, by fortifying the sludge left after a precipitation with one-fifth of the original quantity of the reagent, this sludge, plus the reagent, can be economically applied to a second tank full of sewage, and produce as good effects on the second tank as on the first; and again, by the addition of another fifth of the reagent to the second sludge so obtained, a third tank can be dealt with, with as good results. This feature in the process is important, and must naturally influence the ultimate cost very materially.

The sludge from this process is of a brownish yellow colour, and lacks the shiny appearance of ordinary sludge; and from its being permeated with the reagent (Aminol), it may be left exposed to the sun and wind without any fear of offensive vapours being given off. A quantity of about ten tons lying in the open ground at the time of my visit was perfectly inodorous. Treated in the ordinary way by presses, it becomes a *movable* commodity, half of its moisture having been removed; and it is fully believed that it will be a *marketable* commodity in those places where cost of carriage is not too heavy. Its bulk can be still further reduced, especially in places where a destructor is in use for the purpose of destroying dry rubbish by heat; and laid upon a floor exposed to some of the waste heat of a destructor, it may be made into a powdrette bagged and transported in a handy form. Its manurial qualities are still a matter of investigation, and the Syndicate are acting wisely in not tempting local authorities with visions of large profits from the sale of the cake. The purity of our rivers, and the purity of the air, are matters of far greater importance than a visionary profit from the sale of cake.

On the effect of the effluent on fish life, the inventors claim that, where it goes into a river, and is diluted by not less than ten times its quantity, it is perfectly harmless; and, being rendered sterile, there will be little fear of the presence of the sewage fungus—*Beggiatoa alba*.

On the occasion of a second visit to the Wimbledon Works on August 26, I found the normal process in operation, the Syndicate having ceased its experiments *pro tem.* There was the usual sickly smell of fœtid matter arising from a tank recently emptied, in spite of a quantity of carbolic acid having been put in to deodorise it; black, repulsive, and malodorous in the extreme, a cloudy effluent leaving the tanks totally unfit for the river. The sludge pressing house gives forth a sickly smell, and were it not that the effluent was most thoroughly distributed over the irrigation area, a very offensive state of things would have existed. At the same time, it is but due to the engineer of the Wimbledon Local Board to say that the effluent, as its flows into the Wandle, after a second and often third run on the land, is one of the finest, if not *the* finest, effluent which is to be seen at any works.

Near to the tanks a broad open trench about 12 in. deep had been made by the Amines people, and into this to the depth of 7 in. or 8 in. a quantity of Amines sludge had been thrown seventy-two hours before. This sludge, I was told (not by an Amines employé), had been fifteen days in the tank, and may be said to have been the deposit from 1,500,000 gallons of sewage from a purely heated closet town. Pegs had been placed along the centre of the trench to show the extent to which the sludge would dry up, and although there had been a thunderstorm twenty-four hours after the sludge was put in the trench, bringing with it ·21 of rain, and although there had been an absence of sun, the sludge had sunk to a depth of 8 in.; large open fissures broke up the surface, and there was a general natural shrinking of bulk. After seventy-two hours the sludge was the consistence of plasterer's putty, of a greyish colour, and on taking up a piece on a stick, it proved totally devoid of smell, this proving most conclusively that this new reagent is a thorough deodorant.

Another advantage may be claimed for this sludge—that it may be spread on land in a liquid state, left to dry by the operation of the sun and wind, and then ploughed in, when its manurial values will make themselves felt, without the costly, tedious, and, in the case of all other sludges, offensive process of pressing. Or, when thoroughly dried, it may be used as a means of reclaiming waste lands when they are within reach.

At the rear of the press-house were two heaps of cake—as it is termed—one from the Amines process and the other the ordinary cake. To press this latter thoroughly it is frequently necessary to fortify it with an additional quantity of lime; but the Amines cake, if pressed, does not require such fortification—in fact, I believe that when the process has been further developed, kiln-drying will accomplish all that will be necessary to reduce it in bulk sufficiently to make it easily portable, and ready to be utilized in various ways.

The difference between the two samples of cake could not but strike the most superficial observer.

Discussion.

Mr. F. Corbett (Chairman of the Sewerage Committee of the Worcester Town Council) contended that the broad irrigation which Mr. Hastings recommended was not a satisfactory solution of the difficulty. It had failed even at Malvern, where the conditions to its employment were so favourable. The true system was precipitation. In Worcester the great difficulty of the Town Council was the objection of the inhabitants to sewerage works of any kind at all.

Mr. Cooper (Assistant-Surveyor at Wimbledon) said the press cake from the Amines process gave off none of the offensive smells which characterised other pressed sludge. The Amines process was more economical than the ordinary summer process, though a trifle more expensive than the winter process.

Mr. J. Willis-Bund (Chairman of the Severn Salmon Fisheries Board) asked if the Amines effluent had been tried in rivers where there were fish, and found harmless to them. It might be sterilised and still be harmful to fish; and, being sterilised, it might sterilise matters in the water which it was desirable to preserve. He also desired to know if the process had been found equally efficacious in the treatment of the sewage of places where there was a considerable quantity of manufacturing residuals mixed with the ordinary sewage.

Dr. Tripe (Hackney) expressed himself sceptical as to the value and advantages claimed for the Amines process. The quantity of lime used appeared to him to be excessive, and to seriously impair the pureness of the effluent and the fertilising value of the pressed sludge.

Dr. A. Carpenter (Croydon) said to destroy microbic life, which the Amines process claimed to do, must be injurious to the water-supply and life in the streams. He claimed that the irrigation process was not injurious to health and productive of disease, as frequently represented, and instanced the success of the system at Croydon in proof of his argument that it was the natural and economical process.

Dr. Strong (Beddington) also warmly advocated the irrigation system, and said immunity from zymotic disease more than counterbalanced the cost involved in a sewage farm.

Lieut.-Col. Jones, V.C. (Wrexham), argued in favour of the irrigation process, and expressed his doubts as to the value of the Amines system.

Mr. G. W. Hastings, M.P., said in his experience as Chairman of the House of Commons Standing Committee on Police and Sanitary Matters, he had never heard of a system of sewage disposal which was all it claimed to be, except that of irrigation. The cases of Croydon and Reading were most striking evidences of its success. Of course the necessary quantity of land for efficient sewage farms could not in all cases be obtained.

Mr. Godfrey, the reader of the paper on the Amines process, said it was, of course, impossible to give practical results of the Amines process, which was at present in a purely experimental stage, and it should be given a fair chance. No proof had been given as to the effect of the discharged effluent on streams; but it had been found

capable of dealing with sewage which contained manufacturing residuals.

LECTURE BY SIR DOUGLAS GALTON.

On the evening of the 26th Sir DOUGLAS GALTON, chairman of the Council of the Institute, delivered a lecture to the Congress at the Guildhall, and remarked that the only change they could put their hands upon was in the fact that the education of all classes was by degrees fitting the people to take advantage of the advice given by sanitarians. They were now able to point, with unerring certainty, to the fact that, given certain conditions of impure air, water, and soil saturated with filth, sickness and death would ensue from one or other of those preventible causes. They required a registration of disease, and it was hoped that compulsory notification of infectious diseases would be enforced. After having referred to the success attending vaccination and revaccination in the German army for small-pox, which had been almost entirely obliterated, Sir Douglas dealt with the question of typhus fever, which was a common and fatal disease at the beginning of the century, and said that it was essentially associated with over-crowding and destitution. Reference was made to the improvements in house-building, and to the fact that, as a result, only one death now took place annually where formerly there were 230. In the prevention of scarlatina, it was probable that we should in the future have largely to rely on the study of disease in the lower animals, for recent investigations appeared to make it certain that cows suffered from a disease of the nature of scarlatina, which was in some way communicable to man through the milk. Diphtheria undoubtedly received great development under those sanitary conditions which were involved in the proximity of decaying matter, and was eminently infectious, was stated to appear more frequently in October than in any other month, and to prevail more frequently on clayey than on sandy soils, and especially to have a preferential incidence on families that has shown liability to throat affections. Sir Douglas concluded an address full of sanitary information by dealing with the death-rate, and said that in a diminished death-rate there was also the direct saving from diminished funerals, which had been estimated at an average of £5 a funeral. Thus the saving of life arising from absence of death from zymotic diseases in males and females would amount upon the annual death-rate of Worcestershire to above £5,000 a year. From tables at the end of the paper it seemed that whilst Worcestershire might be classed as a comparatively healthy county, there still existed in the county a large amount of preventible disease, which it was the duty of the various sanitary authorities to fight with and suppress.

CONFERENCE OF MEDICAL OFFICERS OF HEALTH.

THE country meeting of the members of the Society of Medical Officers of Health was held on September 26, under the presidency of Professor W. H. CORFIELD. The business was of a purely administrative character—proposals as to affiliation of provincial societies and so forth.

THE PRESENT AND PROSPECTIVE POSITION OF MEDICAL OFFICERS OF HEALTH.

Dr. HORACE SWETS, D.Ph., read a very interesting and instructive paper on this subject, in which he pointed out that the *Medical Directory* of 1889 gives a list of all medical officers of health and their salaries. He continued:—I find there are 931 attached to urban districts, 547 to rural, and 30 to combined districts, making a total of 1,508. The total amount paid to these officers is £91,093 7s., ranging from £1,000 to £3 per annum, beside which there are a few paid £1 1s. for a report or for a visit when requested. Sixty-five urban officers and 21 rural have no salary stated, some being to the lowest tender. Now with this great difference in the payment of officers of health, allowing all due latitude for extenuating circumstances, it is clear that a large number must be paid to be practical dummies, and that there are some sanitary authorities who do not want the work of sanitation to be carried out. Taking that £30 and under is the limit of do-nothing salaries, it is rather startling to find that the number of such officers is 704, not far short of one-half of the entire body of paid officers of health. Although the medical profession are as a body highly conscientious and self-denying in carrying out the duties imposed upon them, yet they have the ordinary failings of mankind, and it is hard to ask them for £30 a year to give mortal offence to a wealthy patient who perhaps pays them double that amount; and yet that is what a medical officer of health is obliged frequently to do. There are districts where the parish doctor is paid £10 in addition to his salary to undertake the duties. Can we believe that such a sanitary authority wants the work done at all? £100 per annum should be the minimum salary of any medical officer of health, small urban districts being combined with rural. It is to be hoped that before long no one will be permitted to act as medical officer of health without a diploma of sanitary science. Although it would be quite impossible to restrict officers with salaries under £300 or £400 per annum from private practice, yet there is no doubt that private practice is hardly compatible with carrying out the duties of the office with complete effect. It should be an enactment that medical officers of health receiving £300 and over should not be allowed to undertake private practice. This is certainly a step in the right direction, although much of its efficiency to the progress of sanitation will necessarily depend upon what will be the power of the district councils that be hereafter appointed. The powers of the County Council that most concern medical officers of health are those of taking over certain districts under their immediate supervision, appointing one or more medical officers of health for the county, and of demanding copies of all reports which are now required by the Local Government Board to be sent to them. They should be able to go further, and require quarterly reports. These have been discontinued by the Local Government Board for about ten years, but it has always seemed to me that a year is too long a time without an official report. So much valuable information is derived from death returns and statistics, as well as the detailed reports of the medical officer of health on any special outbreak of zymotic disease or of any glaring nuisance, that once in three months is not too often that such matter should be more prominently brought before the notice of the County Council. Although powers have been given to the County Council to appoint a medical officer of health, yet few councils have already done so. In this county the matter is still under consideration. One does not want to appear to dictate in any way, but speaking to the Society of Medical Officers of Health of England, it is well that we as a body should have the opportunity of discussing the matter. At first sight the Act seems to indicate a new departure, and that in process of time all medical inspection should gradually be placed in the hands of the medical officer of health of the county. And the question arises, can one man do it? That depends on the view taken of what the duties of the medical officer of health should be. Two modes of action seem to be open—1. A medical officer of health, with two or more subordinates with him, with a large staff of inspectors. 2. One medical officer of health over the whole county, and those appointed by each district council. It seems to me that the latter plan will be most effective as regards sanitation. The county medical officer of health should occupy the same position to the County Council as Dr. Buchanan does to the Local Government Board. He should be the adviser of the Council. The principal part of his work would be in his office with his clerks receiving every week a copy of all deaths registered, of all infectious diseases notified. He would then be in a position to wire to the medical officer of health of the district council for information, and make a

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special visit if necessary. Knowing the geology, water supply, nature of the soil, and sanitation of the county, he would be able to act as a general officer over the whole without wasting his time in journeying to inspect petty nuisances, which can be better done by the inspector, but above all his highest duty will be to aid the Council by his experience and skill in questions arising on sanitation, water supply, sewage disposal, &c. Much of the future work of sanitation will depend upon the tact and knowledge of the inspectors. They should all have a diploma from the Sanitary Institute, or have been in the actual work of an inspector for some considerable period.

Dr. TAYLOR (Liverpool) said that in Liverpool he had the services of an assistant medical officer, who was in immediate charge of the Sanitary Department; some fifty inspectors were under his control; and so he himself was able to oversee the whole of the reports, and administer the sanitary affairs of the city.

Mr. WILLIS BUND, referring to the fact that the Worcester County Council had under consideration the appointment of a medical officer, said he thought it would be quite contrary to the intention of the Local Government Act that the medical officer of health for a shire should be in any way under the control of purely local sanitary authorities.

Dr. STRANGE advised that the medical officer for the county should be in the position of a chief constable, with district officers and all nuisance inspectors under his control, and in the receipt of monthly, and even weekly, reports from every village and town in the shire.

Dr. ARMISTEAD (Cambridge) moved that the Council of the Association should consider the operation of the Local Government Transfer of Powers Bill, inasmuch as it would very closely affect the work of the shire medical officers.

Dr. THURSFIELD said medical officers should be liable to short notice for misconduct, but the baneful system of re-election ought to be abolished, inasmuch as it led to eye-service.

Dr. BLYTH seconded the resolution, and it was carried.

NOTIFICATION OF INFECTIOUS DISEASES.

Dr. ARTHUR WHITELEGGE read a paper on this subject. No occasion could be more fitting (he said) for the consideration of the question, "The best means of obtaining and carrying out the notification of infectious disease." The recent Act provides for the notification of small-pox, scarlet fever, diphtheria, enteric fever, and typhus. All these are largely dependent upon well-recognised preventable conditions, and are sufficiently dreaded by the public to ensure medical treatment in a great majority of cases. Hence few will escape diagnosis and notification, and the application of preventive measures upon a sufficient scale becomes possible. The argument for compulsory notification is less strong in regard to other infectious diseases, such as measles and whooping-cough, which the Act empowers the Local Government Board to add to the list upon the application of a local authority. In order to reduce the trouble of notifying to a minimum, books of stamped and directed forms are issued (in Nottingham) by the sanitary authority to every medical man practising in the district. When he meets with a case of any of the scheduled infectious diseases, it is only necessary for him to fill in the name and address of the patient, the nature of the disease, and the date, and then to sign and post the certificate. It has been customary to give also the name of the householder, and much time may often be saved by specifying whether the case is or is not for removal. For obvious reasons notification by the householder is made in a less systematic way, and probably any sufficient written or even verbal intimation would be accepted. The next step is for the medical officer of health or his assistants to visit the premises with as little loss of time as possible, and make such inquiries as may be necessary for tracing the source of infection, and for limiting the spread. For this purpose it is convenient to have stereotyped report sheets drawn up for each disease, and distinguished by their colour. Other common points of routine inquiry are the date of invasion and rash, degree of isolation, history of exposure to infection, and relation to other known or suspected cases; also milk supply, water supply, drainage, closet accommodation, number of rooms, and general details as to cleanliness, ventilation, and dryness of the premises. The small-pox sheets provide for special inquiry into the condition of each inmate as regards vaccination and revaccination, with dates. The enteric and diphtheria sheets enter into fuller detail regarding drainage and other possible sanitary defects about the premises, and latterly the range of inquiry has been extended so as to include domestic animals, and the length of residence of the patient. If the sanitary authority has fulfilled its duty in providing proper and sufficient hospital accommodation, free of expense, removal should certainly be offered and (if need be) urged in every case, subject of course to the approval of the medical attendant. Year by year the idea of hospital treatment of such cases has become more and more familiar, and at the present time every case of small-pox and nearly three-quarters of the cases of scarlet fever are removed to hospital. Of course instances occur in which, if necessary, one would resort to compulsion, but fortunately these have so far always yielded to persuasion. If the patient is removed, it only remains to disinfect the premises, to establish a quarantine for the inoculation period of possible future cases, and to keep the household under supervision for that time. Disinfection should be carried out, gratuitously of course, by skilled persons appointed for the purpose, and it is not the least of the advantages of notification that it leads to the substitution of real disinfection for worthless amateur attempts in this direction. Quarantine is most important in small-pox, and the Leicester plan of quarantining the entire household for a fortnight in an annexe to the hospital is worthy of imitation where possible. In other diseases less thorough measures must suffice, viz. exclusion from school or work where the circumstances require it. When the patient remains at home all members of the household are excluded from school attendance until the end of the case, except in enteric fever. Printed as well as verbal directions are given, pointing out the precautions necessary and the penalties incurred by their neglect. A postcard is left, to be signed by the medical attendant as soon as the patient is free from infection, so that disinfection may be carried out by the inspector. Without proper facilities for hospital isolation, notification loses much of its value, although even registration of sickness is helpful. Hospitals should be free to all classes. Any charge, however small and however readily waived, is a serious check to the voluntary isolation which we desire to bring about—indeed, the remission of a charge carries with it a suggestion of charity which is objectionable. Small wards should be provided for the use of those who desire privacy and are willing to pay for the privilege, but any other charges are deterrent in the very cases in which isolation is most needed for the public safety. Lastly, the action of the sanitary authority must be prompt and firm, and any wilful disregard of due precaution should be punished as severely as the imperfect provisions of the Public Health Act permit.

Dr. SWETE explained that in puerperal fever his custom was, on receipt of notification of death, to write to the Registrar to ask that the medical officer who had attended the case to take all precautions and to require the nurse not to attend other patients for a while.

Dr. SYKES said that the model certificate issued by the Local Government Board did not require that the age of the patient should be given, nor was it necessary to state whether the patient was a pauper. This would imply that the medical officer must personally inquire into every case. In every case where an infectious disease was reported from a house occupied by more than one family, the medical officer of health would be com-

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pelled to interfere more or less with the private practitioner, but as far as possible the medical officer of health must interfere rather between the public and the patient than between the patient and his doctor. One grave question would arise. Suppose the doctor declared a patient unfit to be removed, and the medical officer of health ordered his removal to a hospital and the patient died on the road, who would be responsible?

Dr. TAYLOR said that in Liverpool every infected house was flushed at the public expense.

Dr. HOLLINGSHEAD (King's Norton) said that in his district notification had been carried out for five or six years, and a hospital had been in existence for two or three years. The best feeling existed between the medical officer of health and the doctors, and as the result, although scarlet fever was endemic in Birmingham, every one of the thirty cases in King's Norton were in hospital, and six beds had been lent to the Birmingham authorities. He had found it an excellent plan to induce working-men to form an infectious diseases club, in order that the wage earners might receive their wages while the house was infected. Thus the dangers of spreading the disease were minimised without hardship to the family.

Mr. WYNTER BLYTH protested that it was not the duty of the medical officer of health to personally visit every case of infectious disease.

Dr. MAY (Aston Manor) said that the medical officer of health should personally, or by his assistants (including trained inspectors of nuisances), visit every case. Isolation would be of little use unless accompanied by thorough disinfection.

Mr. G. W. HASTINGS, M.P., said that as he had originally introduced the question of compulsory notification in the House of Commons, and had fought it for several sessions, he was glad that notification had at last become law. It was unfortunate that the clauses suggested by the Police and Sanitary Regulations Committee of the House had not been adopted, and it was surprising this was so inasmuch as the Act had been drafted by the officers of the Local Government Board. He believed that notification would have the support of the medical profession. Opposition in the past had been caused by differences on points of detail between members of the profession and the medical officer of health. He had been assured that all opposition was at an end in Edinburgh, and all opposition would eventually die out all over the country if the Act were carried out with due regard to the feelings and the just requirements of the medical profession.

In reply, Dr. WHITELEGGE contended that notification of measles and whooping-cough was impracticable.

THE AWARDS OF THE JUDGES.

The judges of the exhibition were as follows:—Mr. Rogers Field, B.A., M.Inst.C.E. (chairman), Mr. Wynter Blyth, M.R.C.S., L.S.A., Dr. W. H. Corfield, M.A., M.D., Mr. Baldwin Latham, M.Inst.C.E. Mr. Henry Law, M.Inst.C.E., F.G.S., F.S.S., Dr. Louis Parkes, M.D., D.P.H., Mr. J. Wallace Peggs, A.M.Inst.C.E., Dr. J. C. Steele, M.D., Mr. Ernest Turner, F.R.I.B.A. Their awards are as follows:—

MEDALS.

Burroughs & Wellcome, London, for improvements in pharmaceutical preparations.

F. C. Calvert & Co., Manchester, for carbolic acid preparations.

Cellular Clothing Company, London, for cellular clothing.

Henry Dean, London, for Nicholl's eclipse soot and salt closet.

Joseph Cliff & Sons, Leeds, for "Cecil" slop sink.

Guest & Chrimes, Rotherham, for excellence in manufacture of water fittings.

Geoffrey Harrisson, Worcester, for Defries Safety Lamp.

The Liverpool Lint Company, Liverpool, surgical dressings.

Manlove, Alliott & Co., Nottingham, for Washington Lyons steam disinfector; and for Fryer's destructor with Jones's cremator.

Vale of Evesham Fruit Preserving Company, Pershore, for preserved fruits.

J. Ward & Sons, Worcester, for Grahtryx fanlight opener.

Webb's Worcester Tileries Company, Worcester, for exhibit of flooring and wall tiles.

The Worcester Royal Porcelain Company, Limited, Worcester, for their exhibit of art porcelain.

CERTIFICATES.

A. T. Angell, London, for improved air-tight manhole cover.

William Bennett & Co., Worcester, for air-tight soil pail, and for Thomasson's inlet ventilator.

W. Bland & Co., Leicester, for Bland copying machine.

Nathaniel Bletchley, Gloucester, for anatomical boots.

Cadbury Bros., Birmingham, for cocoa.

Joseph Cliff & Sons, Leeds, for enamelled fireclay sink, for Beancliff disconnecting trap, for Beancliff urinal base, and for Yorkshire salt glazed sink.

Henry Dean, London, for Dean's silt trap, and for hygienic dust-bin.

James Gregson, Bolton, for removable rain-water pipes, heads, clips, and hangers.

Guest & Chrimes, Rotherham, for self-acting air valves.

Geoffrey Harrisson, Worcester, for Defries petroleum cooking stove.

Hermann Heim, London, for enamelled iron plates for decorative purposes.

Holloway Brothers, London, for solid wood block floor paving.

Frederick King & Co., London, for Edwards' desiccated soup.

McLean & Sons, Edinburgh, for florador food.

McNaught & Co., Worcester, for arrangement for releasing horses from vehicles in cases of accident.

Millar's Patent Reversible Window Company, London, for reversible windows.

The Liverpool Lint Company, Liverpool, for prepared china grass for surgical purposes.

Peters, Bartsch & Co., Derby, for chemical heat retainers.

Joseph Robinson & Co., Limited, Carlisle, for Robinson's cement for plastering.

The Sanitary and Æconomic Association, Gloucester, for Trew's manhole cover.

St. Bede Chemical Company, Newcastle-on-Tyne, for St. Bede disinfectant.

Mr. R. W. Tomlinson, Worcester, Black's signalling speaking tube, for Burton water-closet, for household water-closet, for Shanks' tubal wash-out closet, and for Tornado water waste preventer.

H. Trytt, London, for removable valves for hot and cold water cocks.

D. W. Wall, London, for sanitary hat linings.

J. Ward & Sons, Worcester, for Herald kitchen range, for Marlborough grate, and for Shank's reliable water waste preventer.

Winser & Co., London, for air-tight manhole cover, for enamelled drain channels, for Stokes's gully trap, and for "Winser" after-flush cistern.

Worcester Sanitary and Ventilating Company, Worcester, for Badger's kitchener, and for Lloyd's Winchester grate.

THE GAS COMPANY'S COMPETITION.

Three silver cups are offered by the Worcester Gas Company—(1) For the best gas stove or gas apparatus for cooking purposes for families, including a sufficient supply of hot water; (2) for the best gas cooking stove for an artisan's family; (3) for the best and most economical open gas fire. The judges have selected the following to compete for these special awards:—William Bennett & Co., Worcester; H. and C. Davis & Co., London; Freeman, Emery & Co., Birmingham; Geoffrey Harrison, Worcester; Siddaway & Sons, West Bromwich; William Unsworth, Warrington; J. Ward & Sons, Worcester; Charles Wilson & Son, Leeds; and John Wright & Co., Birmingham.

EXHIBITS TO BE TESTED.

With regard to certain other exhibits the judges are unable to arrive at a decision without a more elaborate trial than can be given at the exhibition, and the following have been selected for further practical trial in London:—Allen Bros., Great Malvern, mineral waters; John Armitage, Ossett, Yorkshire, snowcake flour; Blondeau et Cie, London, vinolia soap; Bland, Sinclair, Tweedie, & Co., London, chemical fire extincteur; W. and J. Burrow, Malvern Wells, Malvern mineral water; F. C. Calvert & Co., Manchester, carbolic soaps; Clemens, Abell & Co., Worcester, horse-power squegee, improved scavenger's cart, improved street watering van, reversible squegee or footpath cleaner, road scrapers for horse-power and snow plough combined, street sweeping machine, and Wattling's tip waggon; Joseph Cliff & Sons, Leeds, nursery bath, enamelled inside and outside, and Roman bath; E. Cook & Co., London, antiseptic soap; Henry Dean, London, Dunan's metallic-jointed air-tight cover; John Fottrell, Dublin, hygienic cement concretion; Frame Food Company, London, frame food extract; Goodwin Bros., Manchester, ivy soap; Guest & Chrimes, Rotherham, Caink's automatic gas governor, and pressure reducing valve; Hamilton & Co., London, carbolic preparations, and carbolic soaps; the Haslem Fire Extinguisher, Bolton, chemical fire extincteur; Hermann Heim, London, helios stove, and hestia stove; Jeyes Sanitary Compound Company, London, disinfectant soap; C. Kite & Co., London, new under roof ventilator, and simplex water jet airpropeller; Lever Bros., Port Sunlight, sunlight soap; Manlove, Alliott & Co., Limited, Nottingham, Alliott & Paton's filter press, with pneumatic attachment for opening and closing, the Firman's dryer, Fryer's carboniser, and Johnston's dryer; New Wire Wove

Roofing Company, London, wire wove roofing; Peters, Bartsch, & Company, Derby, Antioxide, and Carbolineum avenarius; the Sanitary and Æconomic Association, Limited, Gloucester, Bond's euthermic ventilating stove, and Bond's regulating filter; Scott & Company, London, Archer pipe joint; Scott & Oram, Worcester, sanitary underclothing; R. M. Scott, Bury St. Edmunds, Great Barton, wheatmeal; Spreckley Bros., Worcester, mineral waters; Stott & Co., London, Stott-Thorp reflex sunlight; James Stott, Manchester and London, Stott's gas governor; R. W. Tomlinson, Worcester, Rufford's porcelain bath; Universal Digestive Tea Company, Manchester, digestive tea; J. Ward & Sons, Worcester, Cheavin's filter, Fletcher's gas instantaneous water heater, Fourness regenerative gas lamp, and Rufford's porcelain bath.

EXHIBITS AT THE WORCESTER SANITARY INSTITUTE CONGRESS.

In the classification of exhibits, Class I. comprises building materials, construction and machinery, damp proof courses, paints and other protectives, wall papers, and decorative materials, as well as various mechanical appliances. Prominent amongst the last mentioned are those specially adapted for the laundry. Though this class cannot be said to be strong, it contains individual exhibits of considerable importance, notably those of Messrs. Manlove, Alliott & Co., Limited, of Nottingham. This firm, who also have exhibits in other classes, show in this section the interior part or revolving cage of an Improved Rotary Washing Machine, which is well worth the attention of medical superintendents of asylums and hospitals, on account of its efficiency, simplicity, and economy. It can also be used for disinfecting, boiling, and rinsing. Soiled linen, containing objectionable matter which should not be touched by the hands, can be purified by this machine with facility and thoroughness.

The accompanying cut gives an idea of the construction of the machine. It consists of a circular copper cage, of which the whole of the circumference is composed of small and perfectly smooth copper rods placed a short distance apart, fitted internally with what are known as mid-feathers, two in number, each being formed of a row of strong brass tubes, and revolving on a horizontal shaft within a strong case of boiler-plate, which is fitted with connections for water and steam. The motion of the cage is not continuous in one direction, but is reversed automatically every three or four revolutions. The clothes to be washed are placed within the copper cage, when boiling water is run into the machine through a spray pipe, until it fills the lower part of the case; high pressure steam is then admitted, and the cage set in motion. As the cage revolves, the mid-feathers raise the clothes and allow them to fall or cushion upon the water below twice in each revolution, whilst the water and steam permeates them and passes freely into the cage through the opening between the rods, thus producing the quick and effective washing characteristic of the machine. After this operation has continued for a sufficient length of time to thoroughly wash the clothes, the hot water and steam is discharged, and cold water admitted to rinse them. One special feature in this machine is the automatic reversing arrangement by which the articles are thoroughly re-distributed in the cage, and the twisting or entanglement that generally occurs in those machines where the cage revolves continuously is prevented.

Another exhibit in Class I. that will repay attention is that contributed by Mr. John Fottrell, of Dublin, who shows various samples of "Hygienic Cement and Sanitary Concrete." This material is, as its name implies, a cement concretion charged with antiseptics, the special merit of which is that when used as a flooring or pavement, or laid under boards of dwellings, or as a lining for walls, it will prevent the penetration of odour or infection. It has already been put to severe tests, and has been used among other places at the Richmond Barracks, Dublin, where it would appear, from a report by Dr. Redmond, of that city, to have given great satisfaction. In a Blue-Book containing the report of Commissioners appointed to report on the sanitary condition of the Royal Barracks, the use of it is recommended. There is no doubt a considerable future for this cement, especially for laying beneath the floors of ordinary dwelling-houses to prevent the rise of emanations from noxious sub-soils, which often cause as much mischief as the escape of sewer gases from imperfectly laid drainage connections. A syndicate, with temporary offices at 3, Bucklersbury, are now taking steps to make it widely known.

Closely allied to the above, and in its own way of equal merit, is "Robinson's Fire-proof Cement," exhibited by Messrs. Joseph Robinson & Co., Limited, Carlisle. At this stand are to be seen samples and specimens intended to demonstrate the suitability of this material for plastering, concrete floors, tile setting, and other fire-proof constructions. The patentees claim that for plastering it costs little more than lime and hair, while it renders the walls fire-proof; that for concrete floors it costs less than Portland cement, is stronger, is again fire-proof, and does not shrink or expand. The company also show various sections and specimens of mouldings and other decorations in terra-alba, pearl hardening, &c.

Adjoining the last-mentioned stand is that of Messrs. Holloway Bros., Battersea, who send their Patent Glazed Hanging Tiles and their Patent Fibrous Plaster Ceiling Slabs; while in close proximity the visitor cannot fail to be attracted with the very representative collection of Glazed Bricks, Wortley Faience for panels, dados, hearths, &c., and Architectural and other Terra-cotta brought together by Messrs. Joseph Cliff & Sons, Wortley, Leeds, and the excellent assortment of tiles for all purposes exhibited by Messrs. Webb, Worcester Tileries Co., Limited. The reputation attained by these two firms for their respective manufactures renders it unnecessary for us to comment further upon their exhibits beyond saying that the exhibition would have been materially wanting without them.

In Millar's Patent Reversible Window we have an efficient and inexpensive remedy for those deplorable accidents which have occurred only too often in consequence of the system of window-cleaning hitherto in vogue, while, in addition, the mere work of cleaning can be much more effectively done by the new and improved method. Readers of the Sanitary Record will remember that we have from time to time drawn attention to these terrible fatalities, and urged the necessity for having all windows above the ground floor fitted with some such appliance as Millar's patent, and we again insist that authorities should be as particular in protecting life in this direction as in any other. Mr. Millar seems to have solved the difficulty hitherto experienced of making reversible sashes air-tight and water-tight, and his company, whose works are at 128A, Euston Road, N.W., may fairly expect a large demand for them.

The remaining exhibits in this class calling for notice are improvements in the jointing and hanging of rain-water pipes by Mr. Gregson, of Bolton; Draught Excluders for doors and windows by Messrs. Davis & Crouch, Evesham; "Duroline," a substitute for glass, and "Carboline," a new sanitary damp proof-course, by the New Wire Wove Roofing Co., 164, Queen Victoria Street, E.C.; "Carbolineum Avenarius," a preservative of wood against decay, dry rot, fungus, &c., by Messrs. Peters, Bartsch & Co., Derby. Specimens of new patent Improved Wood Block Flooring, by the Westminster Patent Flooring Co., 18, Abingdon Street, S.W., are shown.

In division No. II., devoted to water supply and sewerage, are shown apparatus for filtering and softening

water, water-waste preventers, flushing tanks, water-closets, dry closets, baths and lavatories, sewers, drain pipes, and their numerous accessories, together with appliances for scavenging and street watering, removal of towns' refuse, &c.

MAIGNEN'S FILTRE RAPIDE AND ANTI-CALCAIRE COMPANY, Limited, exhibit their well-known filters, and also their process for water softening, and so far have the field pretty much to themselves. Water-waste preventors, flushing apparatus, and sluice valves are shown by Messrs. GUEST & CHRIMES, Rotherham, Mr. H. TROTT, Battersea, Messrs. WARD & SONS, Worcester, Mr. MILTON SYER, Peckham, Messrs. WINSER & Co., Buckingham Palace Road, S.W., and The SANITARY AND ECONOMIC ASSOCIATION, Gloucester. The first mentioned of these firms, well known for turning out first-class workmanship, sent a very varied assortment of their manufactures, which comprise, in addition to the apparatus referred to above, patent hydrants or fire cocks, patent water meters, wet and dry gas meters, fire extinguishing apparatus, &c.

Mr. R. W. TOMLINSON, Worcester, had on view several patent water closets, the most noteworthy being the "Unitas," and other well-known patterns of Mr. T. W. Twyford's, whose reputation is too well established to call for further comment.

At Messrs. CLIFF & SONS stand were many things belonging to this section, such as their patent sanitary porcelain baths, porcelain sinks, and lavatory basins.

THE SANITARY AND ECONOMIC ASSOCIATION OF GLOUCESTER exhibited chiefly sewage connections, among which were some things of considerable originality. TREWS' improved Manhole Cover is really an improvement upon many in the market. It possesses the utmost simplicity of action, combined with efficiency.

TREWS' improved grease retainer, and Trews' intercepting trap for house drains are both very good of their kind. A very simple and useful contrivance that should not be overlooked is a scoop tank for country drains, so designed as to avoid imprisonment of gases, and to admit of easy and frequent cleansing with an ordinary road scraper.

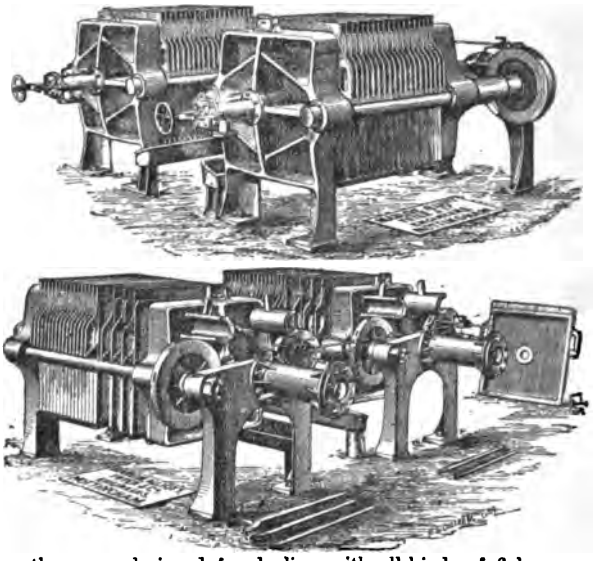
MOULES' PATENT EARTH CLOSET COMPANY, Limited, exhibited in a variety of forms their patent dry earth system of sanitation. The patentees have never put forth the exaggerated statements made by some of their competitors as to the superiority of their system over water carriage for the disposal of sewage in our great cities, but they merely assert, what no unprejudiced mind can dispute, that, under many and varied circumstances, the use of earth closets is not only a boon but actually indispensable. MOULES' apparatus are made in several qualities, and are suitable for cottages, for workhouses, schools, or mansions, and in the commode form for the bath-room or bed-room.

MORRELLS SANITARY COMPANY, Manchester, show their patent automatic cinder sifting, ash-closet apparatus for outdoor use. The object is to utilise house ashes for sanitary purposes, and save cinders for reburning.

Messrs. MANLOVE, ALLIOTT & Co., to whom we have already referred, are also exhibitors in this class, notably with a model of Fryer's patent furnace for burning town refuse, known as the "Destructor." This apparatus, which has been illustrated and described in detail in former numbers of the SANITARY RECORD, maintains its reputation wherever it is adopted, and is, we believe, the most successful means extant for gaining the end for which it is designed.

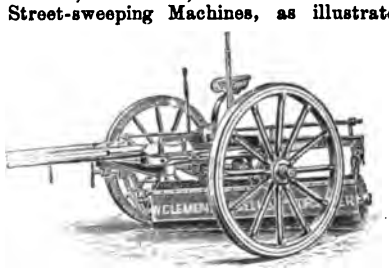
Another piece of machinery with which surveyors should make themselves acquainted is ALLIOTT & PATON'S Patent Filter Press for treatment of sewage sludge, as seen in the two following illustrations of the apparatus. Worked by means of compressed air, great economy is secured, and the patentees claim that the presses are capable of pressing a larger amount of sludge than any other press made.

Messrs. MANLOVE & Co. are also manufacturers of "Johnstone's Patent Dryer," and "Firman's Dryer." These machines, which are supplementary to one



another, are designed for dealing with all kinds of fish offal, blood, and various kinds of waste animal matter, and are stated to have proved most successful in use.

Messrs. W. CLEMENS, ABELL & Co., Worcester, Wagon Works, Worcester, showed one of their Prize-medal Street-sweeping Machines, as illustrated, with



latest improvements; an improved street-watering van, capable of spreading a fine shower 20 feet wide; a road scraper for horse-power, with improved gear; an improved dust or scavenger's cart.

Class III. is set apart for heating, cooking, lighting, and ventilating apparatus, and of these the first two-mentioned sections monopolised by far the greatest amount of space as well as attention. Though we chiefly recognized old friends in these exhibits, especially where gas is the fuel denoted, the specimens sent were of uniform quality and efficiency, for they were old friends in the best sense of the term, as will be readily acknowledged when we mention that the following firms all figured prominently:—Messrs. H. & C. DAVIS & Co., Camberwell Road, London, S.E.; Messrs. JOHN WRIGHT & Co., Birmingham; Messrs. FLETCHER & Co., Warrington and London; Messrs. FREEMAN EMERY & Co., Birmingham; Dr. BOND'S Enthermic Ventilating Stove, shown by the GLOUCESTER SANITARY AND ECONOMIC ASSOCIATION; C. WILSON & SONS, Leeds; and Messrs. SIDDAWAY & SONS, West Bromwich. In addition to these, several local houses were present with the most approved forms of domestic grates and kitchen ranges, hot-water apparatus and appliances for public buildings, dwelling-houses, conservatories, &c.

Mr. HERMAN HEIM, Holborn Viaduct, E.C., exhibited a stove known as the Helios, and which is stated to be absolutely smokeless. It is in appearance of the "Register" type, and adapted for placing in an ordinary chimney-piece, though it need not be fixed. The fire, however, is not open, and is seen only through talc panes.

The smoke abatement question has also not been forgotten by Messrs. PETERS, BARTSCH & Co., Derby, who are showing a patent fuel, termed Carbotron, and which is said to be quite smokeless, and to require neither chimney or flue. The lighting section was almost neglected.

The only illuminators were DEFRIES' Patent Safety Lamps for petroleum, and the FOWNESS regenerative gas lamps and the WELSBACH incandescent gas lamps, shown by Messrs. J. WARD & SONS, of Worcester, and a high-power shadowless street lamp, sent by Messrs. GUEST & CHRIMES, of Rotherham. A few accessories, such as HERON'S duplex gas burner and STOTT'S automatic regulators were the only other exhibits in this department.

Ventilators were but poorly represented. Mr. C. KITE, Chalton Street, N.W., made a first-rate display of his varied and well-tried appliances, which include those suitable for roofs of churches, factories, private houses, stables, and other buildings, inlet and chimney breast ventilators for dwelling-rooms, and exhaust outlet and downcast ventilators for drains. But he virtually had the field to himself, the only other exhibits being the so-called smoke-curers for chimney-pots in one or two of the orthodox patterns, and the "CROSSE" self-acting inlet ventilator and disinfector combined. We append a front view of the last-mentioned, which was described a short time ago in the SANITARY RECORD; but as it possesses considerable merit, we again draw attention to its salient features. It is an ornamental flush ventilator, fitted with movable receptacle for placing pine and other disinfectants, so that the whole of the air enters the room charged with the fragrant or antiseptic vapours of these ingredients.

Class IV. carries off the palm for general interest, for in it are comprised the very wide and varied class of exhibits which make for personal hygiene. The most noteworthy sub-divisions in this class are those devoted to hospital and sick-room appliances, foods, antiseptics, disinfectants, soaps, and disinfecting apparatus. The best exhibit here is that of Messrs. BURROUGHS, WELLCOME & Co., while the stand upon which their goods are displayed is the most attractive in the Exhibition, it being a pretty specimen of Japanese art. To do justice to the large assortment of their products this firm has on view would be a considerable tax upon our space, but the following among others appear to be of special merit:—Kepler Malt Extract, a preparation already so well known that it is hardly necessary to speak about it, but that the sample exhibited is of specially fine quality—the flavour being very rich, and the extract possessing a high degree of diastasic activity. The Kepler malt with cod liver oil, on intimate examination is found not merely to be a mixture of malt with oil, but the oil is in a state of solution in the malt. The preparation is therefore easily assimilable and may be taken with great advantage by children and old people, and those in whom the functions of nutrition are at a low ebb through exhausting diseases. Beef and iron wine is a happy combination of beef and wine which, with the addition of iron and quinine, is a tonic of great value, especially during convalescence. The Fairchild Digestive Ferments were shown in a variety of forms, as Fairchild pepsin in a state of purity in the scale form, and also in the form of tabloids coated with sugar, zymine tabloids and compound zymine tabloids, and zyminized suppositories of beef and milk. The last mentioned have had their respective principles digested by means of zymine, and these principles exist in the suppositories in the form of soluble peptone, which is readily absorbed when administered *per rectum*. The effervescing Antipyrin Bishop particularly struck us, inasmuch as the dose, 10 grains to the drachm, seems exactly the right proportion for convenient administration. Closely allied to this are effervescing citrate and hydrobromate of caffein, both well known by the profession as perfect pharmaceutical products. The Pinol-eucalyptia Dry Inhaler is a very handy and inexpensive little instrument for using with pinol or eucalyptia, or, indeed, any volatile inhalant. It consists of a barrel or tube open at one end, and having a mouthpiece at the other end. The tube is filled with pine chips or absorbent cotton, and at the distal end there is a diaphragm of wire gauze, which prevents the chips from falling out. The pinol or eucalyptia, or a combination of both, is poured on the chips. The patient then inhales from the mouthpiece by drawing air through the tube, which, as it passes through the impregnated absorbent material, becomes highly charged with the drug. By frequent use of this little instrument it is stated that violent spasmodic attacks of coughing may often be averted. Dr. Ward Cousin's Antiseptic Ear Drums excited a good deal of interest amongst the medical visitors to Messrs. Burroughs, Wellcome & Co.'s stand. They are made of cotton fibre thoroughly impregnated with an antiseptic material, and saturated with ether, and then compressed into the shape of a hat with high and tapering crown and broad brim, and there is a short tongue or ribbon attached. These drums are intended for use in cases of rupture of tympanum, otorrhœa, and other diseases of the ear, or as ear protectors. Menthol Plasters are designed to overcome the *transient* action of menthol due to its volatility, and so secure its continuous action. Artificial Sponges of two kinds are shown. The plain sponges are composed of absorbent cotton and elastic fibre, arranged in concentric layers, and covered with antiseptic gauze. The antiseptic sponge is the same, but having in its centre a glass capsule containing an antiseptic, as carbolic acid, and is broken by a sharp squeeze at the moment of application, or as desired. These sponges answer well as a surgical dressing applied under a bandage. Lanoline (Liebreich) and products made therefrom, as Lanoline soap, pomade, cold cream, Lanoline pinol soap, and Lanoline eucalyptine soap are very perfect preparations. The Lanoline cold cream is specially indicated in roughness of the skin, chaps, and other forms of skin irritation, as its action is very soothing. The Lanoline soap, too, is to be highly recommended, as it contains no trace of free alkali. Messrs. COLGATE & Co., of New York, were showing, under care of Messrs. Burroughs, Wellcome & Co., the cashmere extract and cashmere bouquet toilet soap, both of which articles possess a very delicate and lasting fragrance, and are put up in a very elegant manner. Amongst the more recent drugs which are introduced in tabloid form are sulphonal and salol, and as these drugs are both insoluble, the tabloids offer every advantage for exhibition; in fact, are the only really eligible form in which to take these drugs. A veritable *multum in parvo* is the Antidote Case of Messrs. Burroughs and Wellcome. It contains every antidote against all known poisons, besides stomach pump, hypodermic case syringe, and tabloids, also the complete treatise "What to do in Cases of Poisoning," by Dr. Murrell. This case may therefore be said to be a necessity in all hospitals and institutions, and in every surgery, and the practitioner carrying it may feel himself thoroughly equipped to meet the most serious cases of poisoning to which he may be summoned. The Hypodermic Pocket-cases are also very complete of their kind. They contain in addition to the syringe all the alkaloids that are used in this method of administration, which being compressed into tabloids constitute a perfectly exact form of dosage, a matter so obviously important when administering medicines subcutaneously. Each case also contains a little mortar and pestle for triturating and dissolving the tabloids. The Medical Pocket-cases and Medicine Cases were shown arranged for all sorts and conditions of practice, as well as for missionaries and others travelling in either tropical or temperate regions, and included the "Congo" medicine-chest, as supplied to Mr. H. M. Stanley on his present expedition, and to Dr. Emin Bey. The Patent Thermo-safeguard Feeding Bottle, also shown by this firm, is highly deserving of notice. The salient feature of this little article is a thermometer embedded in the glass, and the column of mercury is marked at blood-heat with an arrow, so that the most clumsy person can regulate the

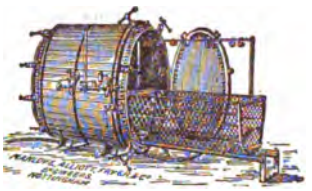
heat without trouble. The feeding bottle is also graduated in ounces, so that the quantity of each meal may be accurately observed. Milk can be readily peptonized by using this bottle, the thermometer showing the heat necessary for the peptonising process.

Among the many meritorious exhibits of food and dietetic preparations the following deserve special attention:—"Great Barton" wheatmeal, fine and coarse, wheatmeal biscuits, and "Qurer" biscuits, prepared from "special" wheatmeal for the dyspeptic, sent by Mr. R. M. Scott, Great Barton Mills, Bury St. Edmunds, who guarantees the wheatmeal to be free from grit and all other impurities. A first-class oatmeal was sent from Ireland; it is known as "Miller's Pride," a title which it appears to well deserve. The exhibitors were Messrs. R. R. Hill & Sons, Drogheda. The genuine Scotch meal was well to the fore on the stand of Messrs. A. & R. Scott (Limited), of Glasgow, who also sent some of their very choice and favourite Midlothian biscuits, improved oat-cakes, and Midlothian tea-cakes, all of which remind us that the "Land o' cakes" still maintains its reputation and earns its name. Those who like variety in this valuable breakfast food, or who wished to test the respective merits of English, Scotch, and Irish meal, had the opportunity of doing so at the stand of Mr. Henry Armitage, of Derby; while those who were more interested in baking-powders, self-raising and fancy flours, satisfied their curiosity at the adjoining stall of Messrs. J. Armitage & Co., whose mills are at Ossett, Yorkshire. The Frame Food recently introduced by the Frame Food Company, Limited, of Battersea, is quite a new departure in foods of this character. It is an extract of the phosphates in wheat bran, made by a patent process, free from chemicals, and is intended to be added to ordinary white flour and to other foods, as cocoa, porridge, jam, &c., samples of which combinations could be tested at the stand. Edwards's Desiccated Soups were also to be seen and tested in large variety. Messrs. F. King & Co., Limited, Belfast, the makers, have just added to their list another production, which they term "Gravina." It is a fine powder, consisting of extract of beef, combined with such choice garden vegetables as are known to be easy of digestion. Being easily soluble, an excellent gravy soup can be made from Gravina in a few minutes. Messrs. Cadbury Bros. had a stand for the benefit of visitors preferring their cocoa to other kinds of refreshments, and Messrs. Clark & Co., of South Lambeth, give similar satisfaction with their Optimus coffee extract. Some very remarkable tea was also winning great approbation. It is termed "Digestive Tea," and is prepared by the Digestive Tea Company, of Manchester. The patentees claim that the tea undergoes a treatment whereby the tannin is entirely neutralized or rendered inactive, while the distinctive and delicate flavours are retained and developed. The appearance of the leaf is not much altered by the process of preparing and drying, and it is offered at prices ranging from 2s. to 3s. 4d. per pound.

The principal contributors of Hygienic Clothing were the Cellular Clothing Co. of Aldermanbury, E.C., whose fabrics have recently been described in the Sanitary Record; Mr. D. Wall, Camberwell Road, S.E. (patent sanitary hat linings), and Mr. N. Bletchly, 89, Northgate Street, Gloucester (anatomical boots and shoes).

Soaps, disinfectants, and antiseptics were well represented. Messrs. Burroughs, Wellcome & Co., and Messrs. Blondeau & Co., respectively, with "Lanoline" soap, and "Vinolia" superfatted soap, took precedence for productions of a high-class character, while Messrs. F. C. Calvert & Co., The Sanitas Co., and Jeyes Sanitary Compound Co. showed a variety of disinfectant and detergent soaps of a thoroughly reliable character. Each of these firms also showed Fluid Disinfectants, the reputation of which are all now thoroughly established. The very potent and absolutely effective disinfectant prepared by the St. Bede Disinfecting Co., of Newcastle-on-Tyne, was also shown, as well as a series of disinfectants manufactured by Messrs. Hamilton & Co., and known as "Pineotas."

Messrs. Goddard, Massey & Warner, Nottingham, showed their Disinfecting Apparatus for treatment of materials by a current of hot air, or by a current of steam, the working of which our readers will remember having seen fully described a short time ago in the columns of the Sanitary Record. Washington Lyon's well-known steam disinfector, manufactured by Manlove, Alliott & Co., Limited, Nottingham, of which we give an illustration, still maintains its reputation, and was also shown.



In this apparatus the principle involved is the destruction of the germs of disease, all formations of insect life, and the lower forms of organisms in wearing apparel, bedding, furniture, &c., and the desired result is thoroughly attained in this invention by the introduction of steam under regular pressure. Messrs. Calvert & Co. and Messrs. Jeyes each sent a simple and useful apparatus for the better distribution of their respective disinfectants in the sick-room, lavatory, &c.

Any exhibits which could not find a legitimate home in any of the four classes alluded to were gathered together by themselves, and catalogued as "miscellaneous." It will probably be a matter of wonderment to many to know, after what has already been said, that anything yet remained that could possibly come under the head of sanitation, and, in truth, there is but little in this class. It is, perhaps, only owing to the great desire of Mr. Box, the excellent curator of the Exhibition, to have a place for everything and to see everything in its place, that the few articles mentioned below are arranged in a separate class.

The Educational Publishing Company, Ryecroft Works, Sheffield, sent specimens and models of appliances for demonstrating lectures on hygiene and sanitary science. Messrs. Dart Bros., Kensington, showed a useful case of optical goods, and Messrs. W. H. Allen & Co. sent a useful assortment of publications, comprising a cheap series of works by Dr. Mortimer J. Granville, a series of health primers by various authors, and a work on *Our Food*, by the late Dr. E. Lankester.

Messrs. McNought & Co., Worcester, showed a medical brougham, with patent arrangement for releasing horses in case of accident.

The Harden Star Hand Grenades, Messrs. Bland, Sinclair & Co.'s Automatic Fire Extinguisher, and the Haslam Fire Extinguisher were all shown; and though the last exhibits to which we have to draw attention, we have much pleasure in testifying to their being among the most useful and necessary things for the household to be found in the whole Exhibition.

Burial Reform.—The Bishop of London has sanctioned the publication, in his diocese, of a statement of the specific reforms proposed by the Church of England Burial, Funeral, and Mourning Reform Association. The reforms, which are of interest to sanitarians, are the following:—1. The adoption of every necessary sanitary precaution in the interests of the living, instead of paying inordinate (or too little) regard to the mortal remains. 2. Timely, instead of delayed burial. 3. Use of a readily perishable coffin, instead of one which is durable. 4. Proper sanitary burial in earth sufficient and of a nature to effect the dissolution of the body, instead of imperfect insanitary burial in a vault or bricked grave, or already crowded pit.

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SPECIAL REPORTS, ABSTRACTS, &c.

THE ASSOCIATION OF PUBLIC SANITARY INSPECTORS OF GREAT BRITAIN.

Second Annual Summer Meeting,

The Annual Summer Meeting of the Association of Public Sanitary Inspectors of Great Britain, was held at Folkestone on September 4.

The Mayor, in opening the proceedings, welcomed the Association, and pointed out the natural advantages and excellent sanitary condition of Folkestone.

Mr. Hugh Alexander, Chairman of the Association, said that the grand purpose of the meeting held that day was to arouse and to inform the public upon the great value of sanitation, and the great necessity that exists for amendment of Sanitary Law and for its improved administration. That was a large subject, and a great necessity, and it led to the foundation of their Association six years ago. Unfortunately the necessity was still with them, and formed a very substantial reason for their continued existence, and for the exercise of all the influence they could bring to bear on public opinion. The object of the Association, he might say, for the information of gentlemen who were not members of the Association, was to improve sanitary law, and to elevate sanitary inspectors. The present position of the law, to a great extent, stultified all their efforts, and to remedy that state of things they were banded together.

Mr. C. S. Legg, the Secretary, then read applications from the following gentlemen for enrolment as members and associateship:—Mr. Alfred Spencer (Deputy Clerk, and Chief of the Sanitary Department of the London County Council), Mr. J. Gibbons, Mr. T. Metcalfe, and Mr. J. Wade, all of the London County Council, Mr. A. H. Clarke (Broadstairs), Mr. Charles Cox (Mile End), Mr. W. D. Millard (Ramsgate), Mr. B. Nurcombe, (Clapham), Mr. G. H. Wild (Wardle, near Rochdale), Mr. Robert Dykes (Northampton), and Mr. G. W. Stanley, as an associate on the recommendation of the Council.

On the motion of Mr. Woonton (St. George-in-the-East), seconded by Mr. Stace (Limehouse), the applications were unanimously voted.

President's Address.

The Mayor of Hastings then read the President's address, from which the following passages are extracted:—

Gentlemen,—I regret very much my inability to attend personally your present Congress. The last report of the Inspectors of Workshops under the Factory Act represents that the great obstructions met with for the application of improved methods of ventilation and sanitation show an entire ignorance of sanitary principles on the part of the wage classes, whom it will benefit, as well as of the employers of the workpeople, whom it will profit. It is recommended that the principles of sanitation should be introduced into elementary education. The ignorance of party politicians leads to an impatience of anything newer and larger with which they are unacquainted. It is in regard to the dangerous fatal wastefulness and excessive expenses of the yet prevalent ignorance of sanitary principles that I have prepared a pamphlet entitled "Circulation or Stagnation," in which I have embodied a very able exposition by an early ally of sanitary principles, made in the year 1856, and have added an account of the achievements made in sanitation since then. What I may expect from this re-publication is that it may, here and there, meet with some competent and earnest minds in this country, and here and there prove an addition to our present experiences.

Sanitation in Folkestone.

Dr. Bateman then read a paper on this subject, which will be reproduced in an early number of the Sanitary Record.

Dr. FitzGerald next read a paper on

Folkestone as a Health Resort.

Dr. Tyson moved a vote of thanks to the Chairman, and remarked that he was informed Mr. Alexander had done so much for the Association that there was a strong wish on the part of many of the members to re-elect him.

Mr. Fairchild, in seconding the resolution, spoke in eulogistic terms of the services rendered by Mr. Alexander to the Association, and then read the following requisition which had been signed by a large number of members.

To Mr. HUGH ALEXANDER, Chairman of the Council of the Association of Public Sanitary Inspectors of Great Britain.

August 29, 1889.

We, the undersigned, being Members and Associates of the Association, beg to ask that you will be good enough to allow yourself to be nominated for the appointment of Chairman of the Council at the ensuing Annual General Meeting.

We are of opinion that, by the large amount of time, thought and energy which you have devoted to the work of the Association, and the ability and strict impartiality which have characterized your Chairmanship during the past two years, that you have added honour and dignity to the office, and greatly advanced the interests of the Association.

We, therefore, trust you will accede to our request.

The Chairman, replying, thanked the gentlemen who had signed the requisition for the honour they had done him, and gave an assurance that he would ever consider the interests of the Associates as a duty of the first importance. He would be prepared to give an answer to the requisition at an early date. He then accorded a high meed of praise to Mr. Legg, the Hon. Secretary, for his exertions on behalf of the Society. He concluded by moving a vote of thanks to Mr. Legg, which was carried by acclamation.

The Chairman also proposed a vote of thanks to Mr. Conquest for his exertions in connection with the visit of the members, and it was enthusiastically accorded and briefly acknowledged by Mr. Conquest.

The members and others adjourned to the Town Hall, where luncheon was served.

The visitors then proceeded to the Gas Works, where they were received by the Chairman, Mr. William Fowle, and Mr. William Medhurst, the Secretary.

Mr. Medhurst read a paper, after which the visitors were conducted round the works and shown the various recently introduced improvements referred to in it.

Mr. H. Turner, the Manager, gave the following interesting particulars:—The source of the water supply to the town of Folkestone is from springs issuing from the foot of the chalk hills, and from six wells sunk into the lower greensand formation to a depth of 70 feet. The water from the wells is pumped into an open reservoir, the springs mentioned fall into it naturally, the low levels of the town are supplied from this reservoir, the high parts are supplied from a tank built on the Cherry Garden Hill, 100 feet above the open reservoir, and holding 630,000 gallons.* Shorncliffe Camp is also supplied from these works from a tank holding 120,000 gallons, placed 150 feet above the open reservoir;† the water is passed through a filter and gauze wire screens before leaving the works. The quantity of water supplied daily is 750,000 gallons; the open reservoir is capable of holding 7,500,000 gallons. The total horse-power of engines is 240. Owing to the difficulty in sinking deep wells at our works, through the very treacherous nature of the sand which has to be sunk through, our works are of a somewhat straggling nature, the shallow wells being sunk here and there. This difficulty has now been overcome, and the Directors intend commencing this year a well of much greater depth and diameter. I may mention that this year there has been fixed at the works two Steel Patent Galloway Boilers, 6 feet 6 inches in diameter.

* This tank is 156 feet long and 40 feet wide, is sunk into the side of the hill, and built up in brick and Portland cement. The walls are two feet thick, and rendered inside with neat cement; the top is arched in. The water is conveyed from it by 22-inch diameter cast iron pipes.

† The contract is for 80,000 gallons a day, which is delivered by gravitation into a tank at the camp holding that quantity.

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and 22 feet long, and a pair of Triple Expansion Worthington Pumping Engines, capable of pumping 42,000 gallons of water per hour each, to a height of 200 feet, supplied by Messrs. Simpson & Co., engineers, Pimlico, London, who are the sole makers of this class of machinery, which is well worth an inspection. The Worthington Pumping Engines were first introduced into this country, from America, by the above firm about three years ago, and are fast supplanting the pumping machinery of the old type. Some of the large water companies have recently had fixed pumps of this class, the West Middlesex Water Company, for instance, have one capable of pumping 24,000,000 gallons per day, and the Chelsea one 17,000,000 per day. Two-thirds of the pumping machinery in America is of this class.

The party then separated highly delighted with what they had heard and seen, and with the hospitable way in which they had been entertained.

THE NATIONAL ASSOCIATION OF SANITARY INSPECTORS.

Conference at Harrogate.

On September 14, the quarterly meeting in connection with the National Association of Sanitary Inspectors (Yorkshire centre) was held in the saloon of the People's Hotel Harrogate. There was a thoroughly representative attendance of sanitary inspectors at the meeting, which was organised through the instrumentality of Mr. Wm. Gray, Rural Sanitary Officer of the Knaresbro' District, and Mr. W. Chipchase, Sanitary Inspector of the Borough of Harrogate. The Association met at 11 o'clock at the saloon, and were received by the Mayor of Harrogate (Councillor Carter, J.P.), Councillor Oxley (Chairman of the Corporation Irrigation Farm Committee), and Councillor Hammond (Vice-Chairman of the Bath Hospital Committee). The following urban and rural sanitary authorities were represented:—J. Newhouse, J. Lindley, W. B. Walker, G. Darley, J. Hanford, J. Thornber, J. W. Mills, T. Booker, T. A. Kitching, M. Morley, M. Hart, J. C. Coates, E. Maude, H. Hammond, W. R. Farnill, and H. Nettleton, Leeds; J. Chambers, P. Burgon, W. C. Rhodes, W. R. Horner, W. Townend, and E. Hodgson, Bradford; D. Travis, Halifax; H. Denham, Tadcaster; A. Whitaker, Wakefield; J. Atkinson, Dr. S. W. North, York; J. Sykes, Holmfirth; W. Gray, Knaresbro'; W. Chipchase, Harrogate; T. Gledhill, Heckmondwike; T. Bake, Wetherby; F. Rothera, Sowerby Bridge; W. M. Drake, Kirkheaton; L. B. Hornblower, New Mill; J. M. Mease, Stokesley; W. Tuley, Toothill Upper; S. Morfitt, W. D. Slater, Wharfedale; L. Starkie, Rothwell; W. W. Oliver, Churwell; T. Braithwaite, Darton; J. Spencer, W. Holmes, Keighley; T. Bottomley, Bingley; T. Wheat, Dewsbury; A. Smithies, Morley; S. Buck, Pateley Bridge; Jas. Smith, clerk to the Knaresbro' Board of Guardians; and Mr. W. H. Gill, Felliscliffe.

Visit to the Irrigation Farm.

The party paid a visit to the extensive Corporation Sewage Farm, where they were met by Mr. J. Smith, the farm manager, who, together with Councillor Oxley, conducted them over these extensive and interesting irrigation works.

Councillor Oxley, in the course of an exhaustive description of the working of the farm, said that the fields were a bed of clay some twelve years ago, but at the present time the land was of the richest and most productive quality. Several of the fields were bearing a fourth crop of grass this season, whilst the turnips and mangolds grown were of excellent quality; in fact, he did not think there would be a crop of turnips equal to theirs within fifty miles of Harrogate. The mangolds were not got in until May 12, and they ought to have had them in by April 12. The same field was sown with corn the year previous; but notwithstanding that, the mangolds would make some excellent weights. The land was irrigated by means of carriers, each of which could be turned on or off at will: the higher portions of the farm being worked in a similar manner, the sewage being gravitated by syphons. The under-drains were twelve yards apart and 4 ft. deep, 3 in. wide in the fields and 6 in. in the main. The whole of the sewage water filtered itself in the land, and they had to be very careful as a Corporation that it should do so, otherwise if it did not, the beck which ran through the land would become polluted, and a claim would be made upon them for damages. The sandy nature of the sub-soil exhausted a great portion of the water, whilst that which was not exhausted was filtered through the land and conveyed to the beck by an effluent in a perfectly clear state. The grass from the land was excellent for feeding cattle and sheep, as also was the clover and corn. Forty bullocks that they had been feeding were sold the Thursday previous for £950. The sheep, too, were also doing well.

In reply to a question as to the cattle having any fever or suffering from anthrax in consequence of being fed on grass, &c., grown on irrigated land, Councillor Oxley stated that they had not had one head of cattle amiss in that respect, which was extremely favourable. The cattle feeding had been a very profitable undertaking, but they did not alone feed them on farm stuff, but cotton and oil cake. The profits on the working of the farm last year were about £500, and they deemed that very satisfactory. The crops sold well, and the stock was also made to pay. He estimated that in about fourteen years the whole farm of 310 acres would be free from encumbrance, and become the property of the town. In the stack-yard they had fourteen splendid wheat and oat-stacks and nine hay-stacks. They estimated the hay-stacks, which averaged twenty tons per stack, would sell at the rate of £4 per ton. They also fed stock on ensilage, but had done away with their silo-house, as it was found that the grass kept better and sweeter in the open air. The work of pressing was done by Johnson's patent presser, which worked with wire rope.

The members of the party were loud in their praise of the excellent character of the products of irrigation, and the admirable system adopted for the distribution of the sewage. The whole of the members were agreeably surprised at the clear character of the water which entered the land as sewage.

Visit to the Bath Hospital.

The party next visited the Victoria Baths, where, under the guidance of Mr. S. Stead, the Borough Engineer, all the various kinds of baths were fully explained; the new and special baths, recently arranged by the Corporation, being a great attraction. The recently acquired Montpellier Estate (at a cost of £29,500) was also traversed, the whole of the wells having been renovated; while the comparisons of the analyses and gaugings were most satisfactory; the results showing an increase of 78 per cent. in sulphur and 20 per cent. in saline constituents. It was also intimated that considerable improvements were contemplated in the erection of a suite of special baths, wherein the most modern methods of treatment would be introduced, and so endeavour to place Harrogate in the front rank of British and foreign health resorts. The Old Sulphur Well subsequently became a feature of interest; but it was most difficult to persuade the delegates to sample the incalculable character of the water. The covered reservoirs were also inspected, and it was further explained that by this system of conservation no less than 360,000 gallons of mineral waters were retained that would otherwise run to waste, and that the storage accommodation was more than sufficient for some years to come. The authorities of the town, it was stated, had acquired the services of a most competent consulting chemist (Mr. R. H. Davis), who had most successfully arranged upon a scientific basis the methods of collecting, conserving, heating, and administering the valuable mineral waters. Probably one of the chief features of the visit of the sanitarians was centred in the inspection of the handsome pile of buildings recently erected by the Governors of the Harrogate Bath Hospital and of the Rawson Convalescent Home. The several wards of the hospital were carefully inspected, and the methods of ventilation in vogue in the rooms were of such a simple

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yet effective nature as to win their golden opinions. The dormitories were viewed with entire satisfaction, the kitchen and culinary department being objects of much interest. The various sanitary appliances throughout the vast building were subjected to a most rigid scruntiny. The lavatories were a source of attraction, the basin plugs, which are of the most unique description, and vastly superior to the ordinary ones now in use, being of exceptional interest; the plumbing work in connection with the bends and joints being most highly commented upon. The basement was subjected to a careful view, as also the sanitary inspection chamber. The flush tanks, of which there are five, were of such a nature as to excite special attention. In these forty gallons of water can be flushed in less than 30 seconds, an advantage of the highest importance to an institution of this character. The whole of the sanitary arrangements adopted met with universal admiration.

The quarterly meeting was afterwards held, under the presidency of the Mayor of Harrogate, who was supported on the platform by Mr. Newhouse (Chairman of the Association), Mr. North, medical officer of health, York; Mr. W. H. Wyles, Town Clerk of Harrogate; Councillor Hammond, and Mr. Armstrong (Knaresborough Rural Sanitary Authority), Dr. Deville, Harrogate; Mr. W. H. Gill, Fellisciffe; Mr. Joseph Lindley (hon. secretary).

Mr. NEWHOUSE, at the outset, explained the objects of the Society, which were the raising of the standard of sanitary inspectors, the exchanging of ideas on sanitary matters, and instructing each other in the knowledge of the duties appertaining to sanitary inspectors. He said the members of the Association were all practical men of experience, and the Association was for the benefit of the public at large. They, as practical men, endeavoured to remedy the defects of the Sanitary Acts, and also to carry out sanitary laws for the advantage of the public.

The MAYOR, who was heartily cheered on rising, welcomed the Association to Harrogate, and alluded to the importance of the work in which they were engaged. He regretted the absence of the President (Mr. T. Pridgin Teale, F.R.S.), who, he said, had done so much for sanitary science. In one of his addresses, Mr. Teale laid before the public the following important facts communicated to him by the officers of a public institution in the borough of Leeds:—"That plans, including the system of drainage, were approved by the Building Clauses Committee of the Town Council, and a year later an officer of the committee passed the drains. When the building had been occupied for about twelve months an outbreak of illness led to an inspection of the drainage, when it was found that peppermint sent down the soil-pipe of a closet on the first floor could be detected in the basement. On opening up the drains it was further discovered that the pipes had neither been puddled nor cemented in the lower segments, leakage taking place at every point." That was a warning to them. There should be an inspection of houses after erection to see that all the sanitary arrangements provided on the plans had been carried out.

Alderman TAYLOR (Chairman of the Corporation Sanitary Committee) gave the Association a cordial welcome in the name of the Sanitary Committee of Harrogate. He was delighted to see such an excellent body of men, whose employment was in enhancing the welfare of the community at large. They were very proud of their medical officer and sanitary inspector of Harrogate; he did not know what they would do without them. Whenever any disease occurred in Harrogate, it was traced to some defect in the construction of houses that had been built for a number of years, and when there was not that supervision of houses that there was at the present day.

Councillor HAMMOND, as representing the Knaresborough Rural Sanitary Authority, also welcomed the Association to Harrogate on behalf of the Chairman of the Knaresborough Union, Mr. R. Ellis, J. P.

Mr. LINDLEY (hon. sec.) then read the minutes of the last meeting, which were confirmed.

Mr. W. H. WYLES (Town Clerk) then gave a few particulars as to the irrigation farm. He said some years ago they learned by costly experience of how not to dispose of their sewage, and the result of that was that the present admirable system of sewerage and sewage disposal was completed. In his office as Town Clerk he was visited almost daily by representatives of sanitary authorities throughout the British Isles, and what they had done at the farm was not only an object of interest but an object of admiration. Their system of sewerage was a very young one; they became a local authority in 1862; but practically the work began in 1868, but mainly in 1874. In the selection of the site and the arrangement of the drains and carriers, the late Commissioners showed great practical wisdom. The farm consisted of 310 acres, and to it night and day the sewage of the town flowed at the rate of 300,000 gallons a day, subject to no pumping or other expense whatever. It cost about £54,000 from first to last; the land had cost £30,000, and the works upon it about £24,000. How did that work in application to the rates? The owner of a house at £40 rental would pay £1 per year for the supreme advantage of having his sewage conveyed away to improve the health of the house, and the town generally. This payment would continue for 40 years only; at the end of which time the principal and interest would be all paid off; and the owner would then share in the freehold farm and the works, which probably would be of greater value than their cost. In conclusion, he referred to the low death-rate of the borough, which was second to none in the United Kingdom, being 13·4 per 1,000 per annum.

THE ADULTERATION OF FOOD.

Mr. W. B. WALKER (Dairies Inspector of Leeds) then read a paper entitled "Food: its Adulteration and Inspection." The first enactment in England to check adulteration was made in the reign of Henry III., and nothing more was done by Parliament until the time of George I., and, with the exception of two Acts relating to the adulteration of bread, all food legislation had reference to the protection of the revenue until George III. The Acts of 1860 and 1872 were by no means generally adopted, only in London and a few large towns. The number of legal proceedings taken under them was small; they worked badly together, and confused the legal mind. A committee was appointed in 1874, and it passed the following resolution:—"That in consequence of the want of a clear understanding as to what did and what did not constitute adulteration, and partly to the conflicting decisions and inexperience of some analysts, we suggested the constitution of a Court of Analytical Reference at Somerset House." Upon the suggestions in the report, the Sale of Food and Drugs Act, 1875, was passed. It was not until the passing of this Act that food inspection took a practical form. Unfortunately, its adoption is to a great extent permissive. Advantage has been taken of this defect. The Local Government Board may require authorities to appoint an analyst, but there is no penalty for refusal. Neither is there any obligation to appoint an inspector, or to procure any number of samples. In the report of the Local Government Board, 1886, we find that in London large districts have submitted only a few samples for analysis; several counties in England and Wales have done likewise, and no less than 70 boroughs, some of considerable size in Yorkshire, Lancashire, and Durham, with an aggregate population of more than 1,000,000, have sent the returns absolutely *nil*. Ireland has acted more wisely, for it appointed analysts and inspectors for every county, and the Corporation of the City of Dublin have set a good example to English towns by the work they have done under this Act. In Paris, with a population of half that of London, they have twenty-four food inspectors who do nothing else. Ten thousand samples a year are analysed which average 3 per cent. adulteration. In London about 2,000 are analysed, averaging 20 per cent. In New York, special inspectors are appointed for the milk trade only. In Boston, U.S., they have an inspector who was appointed

in 1859, when the city had a population of only 178,000 and 300 milk-sellers of all classes. He devotes his whole time in acquainting himself with the milk trade of the city, those engaged in it, the sources of supply, investigating complaints, and enforcing the law. In the work of food inspection, inactivity and neglect are the characteristic features of the English authorities. Food is legally defined as an article used for the food or drink of man, other than water or drugs. Its mixture with ingredients injurious to health has been for sometime unknown, probably from fear of the £50 penalty in sec. 3, yet adulteration is practised to a large extent in the following articles: milk, butter, spirits, coffee, lard, cheese, mustard, pepper, and temperance drinks. Butter substitutes were co-existant with the advent of paraffin. This illuminant greatly displaced the use of candles, and tallow was thereby made a drug in the market. Ingenious Dutchmen were equal to the difficulty, and found that by extracting and purifying the oleo, mixing it with milk, strong butter, earth-nut oil, and colouring, they could produce a sham butter, of many qualities, and of such clever imitation that only experts in the trade could detect it. Its tallowy nature soon developed by exposure to the air. Butterine had a comparatively unchecked sale as butter for twelve years, which filled the coffers of unscrupulous dealers. It is now largely used as butter in second-class restaurants, and entirely so by the same class of confectioners, as the following report in a grocers' journal for December 1888 will show: "Low parcels of margarine for confectioners' work are hard to get, and eagerly taken up when offered, pastry butter being now a thing not heard of." By experience I have proved that the largest retail dealers are the greatest impostors. Tradesmen holding good positions in towns have knowingly and unhesitatingly supplied this sham article as butter to their friends and customers for unjust gain. When the Margarine Bill was passing through Committee the dealers and manufacturers fought hard to retain their favourite name of butterine, but the friends of truth and honesty won, and the Margarine Act of 1887 became law. Its provisions work well, and will check the fraudulent sale of margarine if carefully and energetically executed. For the first time in food legislation this Act legalised the acceptance of an invoice as a written warranty. This is a wise and useful provision, and ought to apply to the Sale of Food Act, 1875. Unscrupulous British traders are to blame for driving that pleasant beverage, coffee, nearly out of the market. It has been so mixed with chicory and other useless things, that public taste rejects it. When chicory was introduced into England in 1820, it was compelled to be sold alone. It should be so now. Mixtures are made for the profit of the seller, and not for the convenience of the purchaser. The present system of labelling coffee mixtures is deceptive, the percentage of chicory they contain should be specified. When the mixture contains more than 50 per cent. of chicory, whether labelled or not, proceedings may be taken under section 8 of the principal Act for fraudulently increasing its bulk. It is necessary that the principal ingredient of the least value should not predominate in the article. Despite the low standards of strength fixed for spirits, they are largely adulterated. Immediately after the present food act was passed, numerous convictions were obtained against publicans for watered gin. But the novelty soon wore out, and spirit inspection since then has passed into cold neglect. Lard is now, and for the past few years has been, often mixed with water, beef tallow, cotton seed oil, and stearine, and sold under the name of lardine, refined lard, and compound lard. This applies more particularly to American produce. Cheesine is skim milk cheese, fortified (?) with margarine. Its manufacture is not now confined to America, for I have seen large quantities made in Scotland. It must be eaten new, or it becomes hard and indigestible. We now come to that perfect and universally used food, milk; which, from the facility with which it can be adulterated, requires more constant and careful inspection than any other article of diet. The law has not yet fixed for it a standard of purity. But Somerset House chemists have fixed a minimum limit, viz.:—

Solids, not fat	8·4
do. fat	2·4
	10·8

The minimum limit fixed by the Society of Analysts is—

Solids, not fat	9·0
do. fat	2·5
	11·5

Somerset House is not a court of appeal, only one of confirmation as to the analysis of the article submitted. As there is a possibility of the sample being sent to Somerset House in all prosecutions, provincial analysts usually adopt its standards, although some of them very reluctantly, it being the lowest possible for genuine milk. Milk found to stand just over this limit is returned as very poor, and to this quality I wish to draw your special attention. I maintain that milk *near* this low limit cannot be drawn from fairly well-bred and fed cows. Practice can assist science in this matter; therefore, when a sample of milk is found "very low," the inspector should visit the farm, have the cows milked in his presence and by his direction, and take a fair sample from the bulk. If a substantial difference is found, legal proceedings should be taken. The milk adulterator has become more cunning. Only gross cases of adulteration appear in the police court, and it is not by these only that the public are defrauded, but by the skilful and systematic additions of water to milk; whilst chemists in their laboratories have been fighting the battle of "standards," unscrupulous milkmen have been robbing the public of thousands of pounds. The adoption of this suggestion would, I think, greatly assist in raising the general standard of milk, and exceed all previous efforts in this direction. It is a blind fatuity on the part of farmers to sell milk that is not genuine, for they are hindering the development of a trade which provides the most profitable outlet they will ever have for their produce. The Amendment Act of 1879 gave additional facilities for procuring milk for analysis at railway stations, and during wholesale delivery. But in the latter case, the sample must be taken from the milk only which is being delivered. As it is a general practice to carry some cans pure and the rest watered, an inspector can be defied, owing to the improper wording of this section. All milk, whether being delivered or in transit for human food, should be liable to inspection. A milk sample may be thirty-five days old when ordered to Somerset House by the Justices. How ridiculous it is to place that report against those of the local analysts, who made the analysis of the milk whilst sweet, will be shown by the evidence of the following gentlemen. In a case at Sheffield, in July 1886, the public analyst for Nottingham is reported to have said:—"One of the samples forwarded to me was in a decomposed condition, the fat having separated and the liquor fermenting actively. It had undergone changes which would seriously interfere with the analysis, rendering accurate analysis wholly impossible. I am, therefore, unable to give any opinion as to the purity of the sample. Milk cannot be analysed unless submitted in a fresh condition." Then followed the public analyst of Manchester:—"I analyse about 1,000 samples a year of milk, and my experience is that an accurate analysis of milk cannot be made one month after it has been taken unless it is artificially preserved." At the Food Conference at the Health Exhibition in London, Dr. Veitch said:—"As to decision in cases of disputed analysis, I think it utterly impossible to put an analysis of an old and decomposed milk against one made of the milk whilst it was sweet. As soon as decomposition has proceeded to a certain point, in my opinion it is almost a waste of time to analyze it." It will be seen that under customary procedure, sending milk of this age for confirmatory analysis is useless. Bad samples should be reported by analysts within the week. The labours of the analyst and inspector are not appreciated by the public.

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The convicted tradesman is considered a martyr to official tyranny. But let us hope that in the near future, people will possess a higher morality. They will then realise and reject the adulterator as a thief. This pest of adulteration is no mere phantom, no invention of the enemy, it extensively exists in the poorer districts of our large towns. It weakens and impoverishes individuals and families, and is sometimes the handmaid of disease and death. It is socially and morally a wide-spread conspiracy against the public weal. Next to the protection of life and property, it is the duty of imperial and local governments to protect the poor against adulteration of every kind, with the same determination and vigour which is being displayed on other sections of sanitary work.

Mr. NORTH characterized the paper as a most able one, and pointed out how important it was to protect not only the poor but the general public from adulterated milk and food. A man who was caught and convicted of selling adulterated milk should be fined heavily, and if a milk-seller was found guilty a second time he should be prevented from dealing in milk. Local authorities should give all the assistance in their power to their inspectors in dealing with the matter under consideration.

Dr. DEVILLE said that of the baneful disseminators of disease milk was at the head. Cows which were confined in sheds and rarely permitted to graze in the open fields, and which had brewers' grains daily as an admixture with their food, produced a large quantity of milk, but very poor in quality, and if the cows were long subjected to this treatment they became tuberculous. The milk was then positively harmful, and was the means of conveying to human subjects tubercular disease. The standard of purity adopted by many analysts was too low, and came into unhealthy competition with the pure milk of the farmer in the country. He hoped the time was not far distant when cow-sheds in towns would be abolished by law. The distribution of milk in towns required the close attention of sanitary inspectors, and the recent enactments respecting it should be rigorously carried out. Concerning unwholesome meat, much of the evil of which they complained arose from private slaughter-houses. It was a matter of grave scandal that there were not in this country public abattoirs, where all cattle should be killed and there inspected, instead of private slaughter-houses, often existing in the midst of a dense population, and inflicting numerous ills, besides being a wasteful proceeding. It should be made imperative on all local authorities whose population exceeded 5,000 to establish public abattoirs. Tea was, he believed, frequently adulterated, but it was a poison at best when taken immoderately, and was a fruitful source of nervous dyspepsia. He had persistently denounced its use, and if the people of this country would only revert to the dietary of the past century, the health, stamina, and stature would be infinitely improved. He was of opinion that the inspectors of nuisances as well as the medical officers of health should be irremovable so long as they faithfully fulfilled their duties, and that they should be independent of any local administrators within certain well-defined limits. If any officer neglected or exceeded his duties he should be liable to be reprimanded or removed by a central authority, such as a commissioner duly appointed by the County Council. Not till then should they have a proper and satisfactory administration of the sanitary laws, for among the offenders were many to be found in the rank of Town Councillors or who might be improperly influenced by others outside the Council.

Dr. RUSSELL did not deny that enteric fever might be disseminated by infected milk, but could not accept all that had been said. In regard to the fever outbreak at Headingley, it was stated that wherever the milk from a certain place was distributed disease broke out, but that was not so. Friends of his were supplied with this milk, and it was given to an infant of three months and to the whole of the family. However, not one of them took the disease. In the next house the disease carried off the father, mother, and two children. A medical officer of health should not have private practice, and should receive every assistance from the local authorities.

Mr. NEWHOUSE, speaking with regard to the standard of milk to be adopted, said the milk of different breeds of cattle varied, and asked where the line should be drawn?

The discussion was further continued by Mr. BRAITHWAITE (Darton), and Mr. GLEDHILL (Heckmondwike). The discussion on the paper then closed, and Mr. WALKER having replied, was thanked for his practical and interesting contribution.

The resignation of Mr. Newhouse at Chairman of the Association was a source of general regret, and the meeting accorded him a cordial vote of thanks for his great services during the two years' existence of the Society. Mr. NEWHOUSE explained that he resigned the office on account of pressure of business and of an affliction.

Mr. TRAVIS proposed, and Mr GLEDHILL seconded, that Mr. Chambers, of Bradford, be unanimously elected in Mr. Newhouse's place. Carried unanimously.

On the motion of Mr. NEWHOUSE, Mr. B. Brown, of Bridlington, and Mr. W Chipchase, Harrogate, were elected members of the Association; and Mr. W. Hullah was elected an associate.

BRITISH MEDICAL ASSOCIATION AT LEEDS.

THE ANNUAL MUSEUM.

THE Museum was this year most advantageously situated in the Albert Hall of the Mechanics' Institute, Leeds, in the very centre of the greatest activity of the meeting, so that the exhibitors, however much they may have been disposed to grumble at receiving an amount of space far short of that for which application had been made, were bound to acknowledge that any shortcomings in this respect were abundantly repaid by the admirable situation. This, however, only applies to Sections A (Food and Drugs) and B (Instruments and Books), for the sanitary exhibits were unfortunately, for want of space, relegated to what is known as the covered playground, on the lower basement floor. Though small in numbers compared with some previous years, there was nothing lacking in the variety and interest of the exhibits. Space will not admit of our referring to more than a few of the more important displays in—

SECTION A, FOOD AND DRUGS.

Messrs. Allen and Hanbury had their usual large display of new drugs and chemicals, including compressed tabellæ, containing in exact and suitable doses many of the most powerful drugs; cocaine and its salts (prepared also in the form of pastilles and lozenges); tasteless cod-liver oil; their Bynin liquid malt, a useful remedial agent in cases of lung disease and general wasting diseases. Their other Bynin preparations included Byno-pepsin, Byno-pancreatin, Byno-hypophosphites, Byno-phosphates, Bynol (malt and oil). Samples of sulphonal (the new hypnotic), saccharin, their fluid extracts, granular effervescent preparations, and their infants' food (malted) were objects calling for notice.

Burroughs and Wellcome had a first-rate show, in every way worthy of their established reputation. Their tabloids of compressed drugs, including antipyrin, sulphonal, papain, thirst, borax, saccharine, salol, cascara sagrada, phenacetin, sulphur comp., quinine, Dover's powder, Warburg's tincture, &c. &c. &c., occupied a deservedly prominent position. Then came their elegant vaporoles for inhalation and fumigation; their antiseptic artificial ear-drums; a feeding-bottle fitted with thermometer for registering the heat of the milk, digestive ferments (Fairchild), lanoline and its preparations; and, what attracted a good deal of attention, a duplicate of the medicine chest supplied to Mr. Stanley the explorer.

The Carrick Company showed their beef peptonoids, Carswell & Co., Camisole's champagne in syphons. These syphons, which have metal fittings capable of resisting the action of the acids, will be found of great service in hospitals and sick rooms, where just as much wine can

be withdrawn as required for present needs, leaving that which remains in a fresh and sparkling condition, whilst in a bottle would become flat and useless.

The other chief exhibitors were Christy & Co.; Corbyn, Stacey, & Co.; Feltoe & Son; Frame Food Co.; Charles Green & Co. (hypodermic injections); Hockin, Wilson, & Co.; Maltine Manufacturing Co.; John Milne (antiseptic dressings); Reynolds and Branson, of Leeds (drugs and special preparations); Sacker (agent for Schieffelin's pills); Seabury and Johnson (absorbent gauzes, lints, and plasters); Stern (pumiline preparations); Thorne & Co. (health cocoa); Universal Digestive Tea Co.; Warner & Co. (bromo-soda parvules and sugar-coated pills); Wooley, Manchester (pharmaceutical preparations); Wyleys, Coventry, ditto.

Among the exhibitors of dietetic and invalid preparations were Brand & Co., Mason, and the Viking Food and Essence Co.

SECTION E, SANITARY EXHIBITS.

The sanitary exhibits were few in number, and contained little of novelty, though some of them, especially those of local firms, were of decided merit.

Jeyes showed their automatic Disinfectant Distributor (Flanders' patent); Gale & Sons (Leeds) had a collection of their "Dominion" mattresses made of steel-wire coppered to prevent rust, fitted with springs at either end, and stretched diagonally in separate V links. These are said to possess great durability and elasticity, and do not become depressed in the centre. Billingtons (Liverpool and London) were well represented by their asylum bedsteads, patent folding bedsteads, bedstead for epileptics, "Bournemouth" invalid's couch, folding camp bedstead, &c.; the Sanitas Co. by their numerous useful preparations. Gibson & Co. (Leeds) showed their family circle patent ventilating gas fire; Somers (Leeds) Lionel Teale's patent front-hob fire-place without bars, with raised tiled hearth. Dixon & Son (Leeds) had a fine collection of Morrison, Ingram, & Co.'s lavatories, shower-baths, enclosed urinal in walnut-wood, admirably got up. Mr. Ward (Tottenham Court Road) showed a patent commode, invented by Mrs. Ferguson Davie, with closed seat and pail with hermetically sealed valve top. Dr. Jacob (Leeds) exhibited his ventilating coil case with mixing valve for steam or hot-water coils; Slater & Sons (Leeds) had a good display of sanitary apparatus, patent combination closet, baths, and lavatories. Mr. Wilkinson (Hull) showed his domestic Turkish bath; Barlow (Bolton) his supple boots, and the Leather and Rubber Boot Co. Scafe's patent rubber and leather combination boots.

NOTES FROM THE NORTH.

(From our own Correspondent.)

AT the last meeting of the Gateshead Corporation the salary of Mr. Joines, the inspector of nuisances, was increased from £120 to £160 per annum. The medical officer of health reported that the birth-rate for the five weeks ending August 10 had been 36·5 per annum, as against 38·9 per annum during the same period last year; the death-rate for the same period had been 20·8, as against 13·3 in the corresponding period of last year. The infant mortality was 213, as against 116 in the 1,000 shown last year. The total population of the borough was 81,303.

Miss M. B. Raynes, of the Liverpool Training School of Cookery, has been appointed assistant cookery mistress to the Jarrow School Board, at a salary of £60 per annum. It has been mooted whether laundry work should not also be taught in the schools.

Continued anxiety is felt at Newcastle-on-Tyne at the excessive high death-rate for which it is now distinguished. For the week ending August 25 the rate showed an average of 29·2 in the 1,000, and for the week ending September 1 it was happily only 25·6, or about one-third higher than the average of the 28 large towns which appear in the Registrar-General's list. We are aware that this unsatisfactory record must be attributed to the apathy of the people themselves on sanitary matters than to any neglect of duty on the part of the energetic medical officer of health for the city or his subordinates. When we remember that the average death-rate of the Newcastle Industrial Dwellings for the year 1888 was only 2·8 in the 1,000, though somewhat crowded with a labouring-class population, householders must consider themselves to blame if they are occasionally reminded of neglect of duty. The best efforts of medical officers of health are too often neutralized by the ignorant stubbornness of those they seek to benefit.

At the last monthly meeting of the Walker-on-Tyne Local Board the medical officer of health for the board reported that during the previous month (August) the death-rate of the district averaged 15·6 in the 1,000 per annum, and the birth-rate 34·8 in the 1,000.

At the last meeting of the Howdon Local Board (near Newcastle) Dr. C. T. Babot, the medical officer of health, reported that the birth-rate of this small district for the month of August was at the rate of 10·8 per 1,000, and the death-rate disclosed the high average of 34·4 per 1,000 per annum. The medical officer drew attention to the disgraceful state of back Dock Street, owing principally to the dirty and careless habits of the occupiers. These people, instead of using the ashpits, throw ashes and all kinds of rubbish and filth on the back street. They had been cautioned against this pernicious practice scores of times. The agent of the property said that about £30 had been spent in repairing the ashpits, and he declined to do anything further. The surveyor said, after what had been done, it seemed hard to require anything further of the landlord.

The authorities of the Hexham and Haltwhistle Workhouses having treated the paupers to skimmed milk, contrary to their proposals submitted to the Local Government Board. They have been requested to supply pure milk in accordance with their tenders, which alone secured the sanction of the Board.

The Town Improvement Committee of the Gateshead Corporation have recommended the planting of trees along Prince Consort Road in that borough, at an estimated cost of £100.

Alderman Cail, of Newcastle, is a grim humorist. At a recent monthly meeting of the council of that city, proposals were made for the erection of public abattoirs in some convenient situation; he said "he could not see why a corporation, who were content with a sanitary system that yearly sent 1,200 people to an untimely grave, should trouble itself about a matter of slaughter-house accommodation."

SANITARY MATTERS IN GLASGOW.

(From Our Own Correspondent.)

THE Medical Officer of Health has just made his annual estimate of the population for the current year. The number of occupied houses, as ascertained by the city assessor at June 1 last, was 116,223, which, multiplied by 4·745 (the average number of inhabitants per house in 1881) gives 551,478 persons. Adding to this 6,126, the number of inmates in institutions, as ascertained by special census, he finds that the total population of Glasgow, as estimated from the occupied houses, on June 1, 1889, was 557,604. This, as compared with last year, shows an increase in houses of 1,860, and in population of 6,169 souls. The following is a summary of the successive movements of the population since the census:—

The estimated population of Glasgow.

1881 to 1882	increase	19,166, or 3·74	per cent.
1882 to 1883	,,	10,228, or 1·92	,,
1883 to 1884	,,	4,250, or 0·78	,,
1884 to 1885	decrease	2,883	
1885 to 1886	increase	2,025, or 0·37	,,
1886 to 1887	decrease	1,325	
1887 to 1888	increase	7,440, or 1·37	,,
1888 to 1889	,,	6,169, or 1·12	,,

At intercensus-rate, increase 2,056, or 0·39 per cent.

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It appears from this statement that the increase last year, though considerably less than between 1887 and 1888, is still three times that allowed by the Registrar-General at the intercensus-rate. In nine of the statistical divisions there is a decrease in the number of inhabited houses. The largest decrease in any district is 103, or 8 per cent., in the Bridgegate and Wynots District. This is owing to the recent interference of the sanitary department in causing the demolition of delapitated and uninhabitable properties. In the eastern district considerable displacement has taken place by the Bridgeton extension railway. The accumulated result of the growth of the city in excess of the intercensus-rate is that his estimate of the population exceeds that of the Registrar-General by 29,460, which amounts to a difference of fully 1 per 1,000 in calculating death-rates. However, as usual, the Registrar-General's population will be that used for death-rates.

The inspection of dead meat has hitherto been carried out in a partial manner by the police, but the Health Committee have of late been anxiously considering the desirability of placing it under the entire charge of the sanitary department, and to secure that no meat be sold in the city until it is inspected. Various committee meetings have been held, and conferences with the butchers' representatives have taken place. A deputation of the Town Council is also at present visiting Manchester, Liverpool, and Edinburgh, for the purpose of obtaining additional information for the sub-committee. The following suggestions have been drawn up and submitted by the Wholesale Butchers' Association, but the consideration thereof is held over until the deputation have given in their report:—

The inspection of dead meat.

First.—That the inspection of dead meat be under the Public Health (Scotland) Act, 1867.

Second.—That, in addition to the existing inspectors, there be appointed—

1. A veterinary surgeon.
2. A pathologist.
3. Two practical butchers drawn from the two societies.

Note.—With a view to give a choice, and avoid inconvenience, each society to appoint a standing committee, or three or five members. The veterinary surgeon to devote his whole time to the work of inspection. His inspection to be both for live stock and dead meat.

Note.—Powers should be obtained (1) to prevent cattle being sold until after inspection; (2) to authorize the veterinary surgeon to have slaughtered before exposure for sale, and that at the owner's risk, all animals suspected by him to be diseased; and (3) to give the owner compensation when the animal is passed in the live market and afterwards condemned. In the event of a difference of opinion between the veterinary surgeon and the owner as to fitness of a carcase for human food, the same to be referred to the veterinary surgeon, the pathologist, and two practical men. If no agreement can be come to by these parties, the rights of both sides are to be reserved.

Third.—The inspectors under the veterinary surgeon to have a uniform different from the police uniform.

Fourth.—That all meat, whether alive or dead, coming into the city, be subject to inspection before being exposed for sale. Special places to be fixed for inspecting meat.

Fifth.—That when animals are condemned, either in whole or in part, the owners be entitled to: (1) the hide; (2) the inside and kidney fat, subject to certain rules as to the disposal thereof; (3) the fat, bones, and meat, after the carcase is boiled, less expenses.

Sixth.—That the existing rules in regard to inspection be relaxed for the following among other reasons: (1) Mr. Sheriff Berry's interlocutor does not warrant the condemnation of carcases where the disease is limited; (2) the scientific knowledge of the country in regard to the bacillus is very meagre, and does not warrant such a radical reform as has taken place since Mr. Sheriff Berry's decision; (3) that in no city in the world, excepting Glasgow, is there total condemnation; (4) that until the authorities can reach the American and country beef which comes into the city (after having undergone the process of stripping), and place the whole trade on an equal footing, all carcases slaughtered in the city which show slight traces of tuberculosis, and where the flesh is healthy, ought to be passed.

It has been agreed to obtain Parliamentary power for the compulsory inspection of all dead meat brought into the city for human food previous to being sold or exposed for sale.

A Healthful Costume. — The *Business Woman's Journal* justly points out that the Directoire costume now in fashion is probably the most hygienic dress that has ever been worn by woman. The absence of full drapery and the plain skirts prevent it from encumbering the limbs, and relieve it from the unnecessary weight which has been so serious an objection to former styles.

National Registration of Plumbers. — A mass meeting of the plumbers of the western district of London was held at the Kensington Town Hall on October 10 for the purpose of considering the scheme of registration as promoted by the Plumbers' Company. Mr. John Smeaton, a master plumber and a liveryman of the company, was voted to the chair. The proceedings commenced by the reading of a statement of accounts showing that the receipts of registration fees and annual fees amounted to £1,756 18s. 6d., and the expenditure to £4,532 13s. 2d., the difference, £2,775, having been contributed by the Plumbers' Company. There was a series of resolutions submitted to the meeting. The first adopted called upon the Plumbers' Company to apply for Parliamentary powers to carry out the registration system efficiently and provide that practical plumbers should inspect all plumbing work. In support of this it was pointed out that at the present time the parish sanitary inspectors, with whom rested the passing of work done at houses, were invariably unskilled men, sometimes superannuated policemen or pensioned soldiers, and quite incompetent to form an opinion as to whether the work inspected was good or bad. Every sanitary inspector should be a plumber. In regard to those learners attending the technical and practical classes in connection with polytechnic institutions, it was agreed that none but plumbers' sons, if following the trade, or articled apprentices should be eligible. It was held that it would be unfair to the craft for a plumber's labourer to go to the classes and then pose as a full-blown plumber. In order to give confidence to the trade it was deemed wise that one-third of the registration committee should retire annually, and that their places be filled by representatives from London houses. The meeting resolved to ask the Plumbers' Company to insist that any applicant for registration shall be in receipt of the full trade-rate of wages of the town he is working in. An important resolution was introduced by Mr. W. H. Webb, to the effect that in view of the zymotic diseases engendered by bad plumbing work, the Government be urged by the Plumbers' Company to legislate upon the subject. It was well known that much of the disease in London was brought about by bad plumbing, and this system of registration had been brought about with a view to secure properly qualified men, and have the work done satisfactorily. It was agreed that no certificate of registration should be granted to any candidate unless he passed through a practical and technical examination. A suggestion was agreed to to the effect that very many of the evils arising from bad plumbing were due to the work designed by architects and sanitary engineers whose plumbing knowledge was deficient and unpractical, and whose action checked enterprise in the plumbing trade and gave undue prominence to patent appliances. The concluding resolution passed was:—"That it is in the interest of the plumbing trade collectively to support and strengthen the registration movement."

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THE

SANITARY RECORD.

The Organ of the Association of Public Sanitary Inspectors of Great Britain, and of the National Association of Sanitary Inspectors.

OCTOBER 15, 1889.

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The Editor will be glad to receive, for publication, announcements of meetings, reports of proceedings, and abstracts or originals of papers read at meetings of Medical Societies of Health, Public Analysts, and Sanitary Inspectors' Associations, &c.

Medical Officers of Health, Public Analysts, Town Clerks, Local Board Clerks, Sanitary Surveyors, and Inspectors, are requested to send Notices of Appointments and Vacancies to the Editor, care of Messrs. W. H. ALLEN & Co., 13 *Waterloo Place, S.W.*

THE SANITARY RECORD will in future be published by Messrs. W. H. ALLEN & Co., 13 Waterloo Place, S.W. All matters relating to the literary portion of the Journal, and all exchange journals, periodicals, books for review, and new inventions, should be addressed to the EDITOR at above address. All business communications relating to Advertisements, Subscriptions, &c., to be addressed to the MANAGER, at the same address.

NOTES OF THE MONTH.

HOUSING OF THE WORKING CLASSES.

IMPORTANT recommendations, from a sanitary point of view, have been set forth by the Committee of the Housing of the Working Classes of the London County Council, as to the course to be adopted in regard to staircases, basement floors, bath-rooms, and the sizes of rooms in the buildings they undertake. As to staircases, they intend to have the buildings provided with staircases close to the outer wall and having large openings communicating with the open air. This staircase can be conveniently arranged to give access to four dwellings, and the ventilation of the dwellings will be effected by means of open doors and fanlights, so that a thorough current of air can be obtained when desired. In building artizans' dwellings it is generally expedient to construct a storey below the ground floor, though it is not necessary for them to be used as dwellings. The basement floor is undesirable as a residence, but there is no reason why it should not be used, provided that adequate precautions are taken, and that the bottom of the window sills is not lower than the level of the adjoining pavement, and not more than three feet above the floor. The Committee think that where no areas are practicable, the walls should be covered with asphalte or other damp-resisting material, from the damp-course to the footings. Bath and wash-house accommodation is to be provided to every block of dwellings, as it rarely happens that the dwellings are in close proximity to public baths and wash-houses. This section of the dwellings will be constantly under inspection. In connection with the baths, the question of water-closet accommodation was considered, and it was agreed that a sufficient number of closets should be supplied to each floor of dwellings, to which a separate staircase should be provided together with a provision of sinks and water-supply for common use. Dust-shoots are to be provided from each common scullery, or from the landing adjacent, to discharge into galvanised iron movable dust-bins, which can be carried out and emptied into the dust-cart. In a one-roomed tenement the minimum superficial area is to be 144 feet, and the room should measure 12 feet by 12 feet; a two-roomed tenement is to have a similar room with an additional room containing 96 superficial feet or measuring 12 feet by 8; a three-roomed tenement is to have a large room containing 144 feet in superficial area, and two rooms, each containing 96 feet. The standard height for every room is to be 9 feet. It is intended to bestow care on the design of the buildings so as to give them a pleasant appearance.

A SANITARY INSPECTOR WITHOUT A SALARY.

THAT sanitary inspectors are often expected by local public bodies to discharge efficiently the duties of their office at a salary altogether inadequate and out of proportion to the important services they render, is a fact which, unfortunately, admits of easy verification, and illustrations of which might be abundantly supplied from our own "appointment" and "vacancy" columns; but a sanitary inspector *without a salary* is, we believe, a new experience, and, we trust, an isolated one. The inspecting officer of the Board of Supervision, Hawick, reports the sanitary state of the burgh to be good. He adds that no salary is attached to the office of sanitary inspector, and remarks that "in an important burgh like this, where so much responsibility attaches to the sanitary inspector, a proper salary should be paid. It must," he adds, "be borne in mind that a salary must be attached to the office to enable the sanitary inspector to act legally." We hope the burgh in question will lose no time in legalizing the appointment, if only for the sake of the holder.

COMPULSORY NOTIFICATION OF INFECTIOUS DISEASE.

WE print, on page 102, circular letters which have recently been addressed by the Local Government Board to sanitary authorities throughout the country in explanation of the provisions of the Infectious Disease (Notification) Act of last session. By that Act the immediate notification of cases of infectious disease to the local medical officer of health by the medical attendant and the head of the family or "occupier" becomes compulsory within the metropolitan area after October 30, 1889, and within the districts of such other sanitary authorities throughout England, Wales, Scotland, and Ireland as formally adopt the Act. It is to be hoped that this Act, which it has taken such a long time to obtain, and which may, if properly used, become a powerful agent in preventing epidemics, will be given a fair trial throughout the country. The "permissive" operation of the Act outside the metropolis is for many reasons to be regretted; but it is to be hoped that provincial authorities will take the advice of the Local Government Board, and consider forthwith "whether, with a view to obtaining additional means of checking the spread of infectious disease in their districts, it is not desirable that they should avail themselves of the power which has been conferred upon them of adopting the provisions of the Act." It is, perhaps, worth while to warn local authorities

to be careful to conform strictly to the letter of the provisions when adopting the Act. For instance, when a resolution to adopt the Act is to be proposed at any meeting, "fourteen clear days at least before such meeting special notice of the meeting and of the intention to propose such resolution" must be given to every member of the local authority. Again, the resolution, when passed, must be "published by advertisement in a local newspaper, and by hand-bills, and otherwise," &c.; and the date when the Act is to come into operation shall be "such time *not less than one month after* the first publication of the advertisement of the resolution as the authority may fix." Attention to these and other details may prevent subsequent troublesome questions being raised as to the validity of the proceedings.

SCARLET FEVER IN BIRMINGHAM.

THERE has been, and is, a severe epidemic of scarlet fever at Birmingham. The pressure on the resources of the City Infectious Hospital (where there have been over 300 patients for some time past) has been so great that the Health Committee of the City Council has been obliged to make arrangements with neighbouring local authorities to treat scarlet fever cases from the city in their fever hospitals, and many cases have been removed to the Aston Infectious Hospital and to that of the King's Norton Rural Sanitary Authority. The Health Committee have erected temporary buildings for the accommodation of forty additional patients. Nine of the nurses and one of the cooks at the City Infectious Hospital were attacked with the disease, as also was, we regret to learn, Dr. Eustace Hill (son of the Medical Officer of Health for Birmingham), the assistant surgeon to the hospital, who was for some time in a very critical condition.

MEDICAL OFFICER FOR LEEDS.

THERE were fifty-two candidates for this important appointment, rendered vacant by the resignation of Dr. Goldie. The choice finally rested between the following three gentlemen:—J. Spottiswoode Cameron, M.D., B.Sc.Edin. (Huddersfield), Alfred Edwin Harris, L.R.C.P., L.R.C.S.Edin. (Sunderland), R. D. R. Sweeting, M.R.C.S.Eng. (Fulham). Dr. Spottiswoode Cameron, who since 1877 has filled the important post of Medical Officer of Health to the Borough of Huddersfield with eminent ability and success, was selected. Dr. Cameron has long taken a leading place among sanitarians. His high intelligence, zeal, untiring industry, and profound sanitary knowledge, are constantly evidenced throughout his annual and special reports, of which we have often had to speak in terms of warm commendation. His professional attainments are of a high order, and he may be said to be in all respects well qualified for the office to which he has been elected.

CLEANSING OF WATER CISTERNS.

AT a recent meeting of the Public Health Committee of the Town Council of Edinburgh a number of regulations for the inspection of waste-pipes and the cleaning of cisterns were submitted, and a recommendation made to the Council that they should be enacted. They give power to the Burgh Engineer or other authorized sanitary inspector or officer to examine water cisterns, pipes, and other apparatus connected therewith. Any cistern found to be foul the occupier shall effectually cleanse within six days from date of notice; failing to do so the work shall be carried out under the authority of the Burgh Engineer at occupier's cost. All cisterns used for domestic purposes to be cleansed at intervals not exceeding six months.

THE HORSE-FLESH ACT, 1889.

THIS Act, which came into force on September 29 last, gives power to the medical officer of health and inspector of nuisances to inspect, examine, and seize horse-flesh illegally exposed for sale. The Act enjoins that "no person is to sell, offer, or keep for sale horse-flesh intended for human food elsewhere than in a shop, stall, or place over or upon which there shall be at all times painted, posted, or placed in legible characters, of not less than four inches in length, and in a conspicuous position, and so as to be visible throughout the whole time, whether by night or day, during which such horse-flesh is being offered or exposed for sale, words indicating that horse-flesh is sold here." "No person shall supply horse-flesh for human food to any purchaser who has asked to be supplied with some meat other than horse-flesh, or with some compound article of food which is not ordinarily made of horse-flesh." The justices have the power to grant a search warrant, and to order the horse-flesh seized to be disposed of as thought desirable. For the purposes of the Act the term "horse-flesh" includes the flesh of mules and asses, and mean horse-flesh cooked or uncooked, alone or accompanied by, or mixed with, any other substance. The maximum penalty for infringement of the Act is £20.

INFECTION CARRIED BY HAWKERS.

THERE has been an increase of scarlet fever in Greenock, and Dr. Wallace calls attention to various ways in which the disease has been disseminated either by concealment, or perhaps ignorance. A possible mode of the conveyance of the infection is worthy of remark. The father of a child reported to be ill of scarlet fever intimated that the disease might have been brought to his house by a party of travelling hawkers who had taken up their quarters in the East District, and who had called at his house in pursuit of their calling. Following up this clue the sanitary officers found the man, who lived with a wife and three children in a travelling van—he and two of the children going from street to street with a cart filled with various kinds of delf which the children hawked from door to door. On inquiry it was ascertained that they had come to Greenock about three weeks previously from Dumbarton, where they had been for four weeks, during which time the youngest child, aged fifteen months, had been ill with scarlet fever, and under regular medical care. The authorities at Dumbarton wanted to remove the child to the hospital there, but, the mother objecting, the patient continued to be treated in the van, the father and the other children sleeping below it. The patient recovered, but unfortunately the father succeeded in removing to Greenock without giving the Dumbarton authorities an opportunity of doing anything in the way of disinfecting the van and its contents. With such a history, confirmed as it has been by the result of inquiries of the authorities at Dumbarton, it was imperative on the department in Greenock to carry out disinfection. This was done accordingly, the family being kept in the reception-house till it was considered safe to let them resume their business.

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Table showing Sickness and Mortality in Large Towns of England and Scotland during the Month of September 1889

Towns.	Estimated Population middle of 1889.	Small-pox. Reported Cases.	Small-pox. Deaths.	Scarlet Fever. Reported Cases.	Scarlet Fever. Deaths.	Diphtheria. Reported Cases.	Diphtheria. Deaths.	Typhus Fever. Reported Cases.	Typhus Fever. Deaths.	Enteric Fever. Reported Cases.	Enteric Fever. Deaths.	Cholera. Reported Cases.	Cholera. Deaths.	Relapsing Fever. Reported Cases.	Relapsing Fever. Deaths.	Puerperal Fever. Reported Cases.	Puerperal Fever. Deaths.	Totals of Preceding Columns. Reported Cases.	Totals of Preceding Columns. Deaths.	Annual Rate per 1,000 Persons Living. Reported Cases.	Annual Rate per 1,000 Persons Living. Deaths.	Deaths from other Zymotic Diseases. Ill-defined Fever.	Measles.	Whooping-cough.	Diarrhœa.	Total Mortality from all Causes per 1,000 Persons Living.
Aberdeen	121,448	—	—	7	—	2	1	—	—	19	4	—	—	—	—	—	—	28	5	2·8	0·5	—	2	—	9	17·1
Accrington	39,000	—	—	2	—	1	—	—	—	3	1	—	—	—	—	—	—	6	1	1·9	0·3	—	1	2	6	17·2
Ashton-under-Lyne	40,488	—	—	10	—	2	—	—	—	16	3	—	—	1	—	1	1	30	4	9·0	1·2	—	1	—	2	18·3
Barrow-in-Furness	50,000	—	—	8	—	3	1	—	—	3	—	—	—	—	—	2	2	16	3	3·9	0·7	1	—	—	7	14·8
Birkenhead	102,300	—	—	18	1	—	1	—	—	12	1	—	—	—	—	—	—	30	3	3·6	0·4	—	—	3	4	15·0
Blackburn	122,000	—	—	35	7	2	—	—	—	6	—	—	—	—	—	—	—	43	7	4·6	0·7	—	—	3	36	22·9
Blackpool	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bolton	114,670	—	—	147	8	10	2	2	—	8	3	—	1	—	—	—	1	167	15	19·0	1·7	—	1	5	19	19·7
Bradford	235,056	—	—	50	8	1	—	—	—	49	12	—	—	—	—	—	—	100	20	5·5	1·1	—	3	11	16	16·3
Burnley	80,000	—	—	53	3	—	—	—	—	95	12	—	—	—	—	—	2	148	17	24·1	2·8	—	6	1	23	24·8
Burton-on-Trent	47,493	—	—	7	—	1	—	—	—	1	—	—	—	—	—	—	—	9	—	2·3	—	—	1	—	7	13·3
Bury	60,359	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Chadderton	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Chester	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Croydon	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Darwen	34,500	—	—	30	—	—	—	—	—	3	—	—	—	—	—	—	—	33	—	12·0	—	—	2	—	7	18·2
Derby	98,525	—	—	70	—	8	5	—	—	4	1	—	—	—	—	—	—	82	6	10·9	0·8	1	1	—	7	14·7
Dewsbury	33,000	—	—	12	1	2	1	—	—	7	1	—	—	—	—	—	—	21	3	7·7	1·1	1	3	1	9	22·1
Dundee	163,300	—	—	39	—	5	3	—	—	26	6	—	—	—	—	—	—	70	9	5·2	0·7	—	—	9	16	17·4
Edinburgh	266,900	—	—	200	3	22	6	4	2	51	4	—	—	—	—	—	—	277	15	12·6	0·7	—	—	11	24	13·6
Greenock	78,248	—	—	34	—	1	2	2	1	14	1	—	—	—	—	—	—	51	4	8·5	0·7	—	—	—	4	17·2
Guildford	13,428	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	2	—	1·8	—	—	—	—	—	11·8
Halifax	81,200	—	—	12	—	3	1	—	—	9	2	—	—	1	—	—	—	25	3	4·0	0·5	—	2	1	5	19·3
Hartlepool	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Heywood	25,000	—	—	—	—	1	1	—	—	1	—	—	—	—	—	—	—	2	1	1·0	0·5	—	—	—	2	11·7
Huddersfield	92,825	—	—	26	2	10	2	—	—	7	4	—	—	—	—	—	2	43	10	6·0	1·4	—	2	5	7	15·2
Jarrow	31,000	—	—	4	—	1	1	—	—	3	—	—	—	—	—	—	—	8	1	3·1	0·4	—	—	—	8	19·2
Kngstn.-on-Thames	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Lancaster	27,740	—	—	—	—	—	—	—	—	4	—	—	—	—	—	1	—	5	—	2·4	—	—	—	—	1	17·4
Leek	13,700	3	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	4	—	3·6	—	—	—	—	—	8·9
Leicester	150,520	—	—	36	—	10	—	—	—	8	—	—	—	—	—	—	—	54	—	4·7	—	—	2	2	21	13·7
Llandudno	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Llanelly	22,828	—	—	2	1	—	—	—	—	1	—	—	—	—	—	—	—	3	1	1·6	0·5	—	—	—	—	12·8
Macclesfield	37,514	—	—	16	1	—	—	—	—	4	2	—	—	—	—	—	1	20	4	7·0	1·4	—	1	—	6	20·9
Manchester	378,800	—	—	256	19	39	10	1	1	34	6	—	—	—	—	4	4	334	40	11·5	1·4	—	7	7	61	21·9
Nelson	16,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Newcastle-on-Tyne	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Norwich	94,510	—	—	6	—	15	2	—	—	24	5	—	—	—	—	—	—	45	7	6·2	1·0	—	1	1	14	17·4
Nottingham	237,812	—	—	101	1	2	—	—	—	57	11	—	—	—	—	—	—	160	12	8·8	0·7	—	—	2	27	14·6
Oldham	142,405	—	—	43	7	—	1	—	—	8	—	—	—	—	—	—	—	51	8	4·7	0·7	—	2	5	9	15·8
Portsmouth	141,254	—	—	111	5	19	5	—	—	39	6	—	—	—	—	2	1	171	17	15·8	1·6	—	—	3	16	18·3
Preston	104,194	—	—	17	1	5	4	—	—	56	9	—	—	—	—	—	—	78	14	9·8	1·8	—	8	1	47	26·5
Reading	60,654	—	—	4	1	2	1	—	—	2	—	—	—	—	—	—	—	8	2	1·7	0·4	—	—	2	4	11·8
Ripon	7,670	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	—	27·0
Rotherham	36,482	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Salford	234,283	—	—	138	9	71	10	—	—	64	10	—	—	—	—	—	—	273	29	15·2	1·6	—	3	4	44	16·8
Stafford	20,600	—	—	—	—	—	—	—	—	2	1	—	—	—	—	—	—	2	1	1·2	0·6	—	—	—	1	27·2
Stalybridge	27,938	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Sunderland	134,193	—	—	45	2	2	—	3	1	13	3	—	—	—	—	1	1	64	7	6·2	0·7	—	10	8	22	24·8
Torquay	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Wakefield	33,360	—	—	37	3	1	—	—	—	16	—	—	—	—	—	—	—	54	3	21·1	1·2	—	2	1	6	20·3
Warrington	48,200	—	—	11	2	1	1	—	—	3	1	—	—	—	—	—	—	15	4	4·1	1·1	—	10	5	7	25·2
West Ham	180,000	—	—	162	10	19	5	—	—	30	7	—	—	—	—	3	3	214	25	15·5	1·8	—	1	3	22	14·9
Weymouth	14,008	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	1	—	0·9	—	—	—	—	1	13·8
Willesden	52,915	—	—	25	1	15	—	—	—	2	1	—	—	—	—	2	—	44	2	10·8	0·5	—	—	2	5	10·6
York	75,327	—	—	14	—	3	—	—	—	40	4	—	—	—	—	2	1	59	5	10·2	0·9	—	—	6	14	16·8

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THE PUBLIC HEALTH

During September 1889.

The mean temperature during the month of September at the Royal Observatory, Greenwich, was 55°·8, and was 0°·7 below the average September temperature in 100 years. An excess of temperature prevailed on twelve days during the month, while on the remaining eighteen days it was below the average. The warmest day of the month was the 11th, when the mean temperature was as high as 68°·1, and showed an excess of 10°·0; the coldest day was the 22nd, when the mean temperature was only 47°·0, and was 9°·2 below the average. Rain was measured on seven days during the month under notice, to the aggregate amount of 1·7 inches, which was 0·7 of an inch below the average for the corresponding period in sixty-one years. During the first nine months of the current year the rainfall has amounted to 17·1 inches, which was 1·1 inch below the average amount in the corresponding periods of sixty-one years. The sun was above the horizon during 376·9 hours during September, and 125·8 hours of bright sunshine were recorded at Greenwich, which was slightly above the average amount registered in the corresponding months of the ten preceding years. The wind was easterly during the first week of the month, after which south-westerly winds generally prevailed.

In the 28 large English towns dealt with by the Registrar-General in his weekly return, which have an estimated population of upwards of nine and a half millions of persons, 21,656 births and 12,435 deaths were registered during the four weeks ending Saturday, September 28. The annual birth-rate, which had declined from 31·9 to 29·9 per 1,000 in the 4 preceding months, further fell to 29·6 during the month under notice, and was considerably below the average rate in the corresponding periods of the seven preceding years, 1882–88. The lowest birth-rates last month in these 28 towns were 23·9 in Brighton, 24·1 in Bradford, and 24·6 in Huddersfield; in the other towns the rates ranged upwards to 35·8 in Sunderland and in Cardiff, 36·4 in Newcastle-upon-Tyne, and 37·2 in Preston. In London the birth-rate last month was equal to 28·9 per 1,000, while it averaged 30·1 in the 27 provincial towns.

The annual death-rate in the 28 towns, which had been 20·4 and 18·0 per 1,000 in the two preceding months, further declined to 17·0 during the month under notice, and was below that recorded in the corresponding period of any of the seven preceding years, 1882–88. The lowest rate of mortality in these towns was 14·5 in Brighton; the rates in the other towns, ranged in order from the lowest, were as follow:—Nottingham, 14·6; Derby, 14·7; Huddersfield, 14·8; London, 15·1; Birkenhead, 15·5; Birmingham, 15·7; Oldham, 15·8; Bradford, 16·3; Bristol, 16·4; Salford, 16·8; Norwich, 17·3; Portsmouth, 18·3; Sheffield, 18·5; Cardiff, 18·6; Liverpool. 18·8; Leeds, 18·8; Hull, 19·1; Wolverhampton, 19·4; Halifax, 19·5; Leicester, 19·7; Bolton, 20·9; Manchester, 21·8; Blackburn, 23·1; Sunderland, 24·8; Newcastle-upon-Tyne, 26·7; and the highest rate during the month, 28·0 in Plymouth and in Preston. The mean death-rate in the 27 provincial towns was 18·6 per 1,000, while in London, as before stated, the rate did not exceed 15·1 per 1,000. The 12,435 deaths from all causes in the 28 towns during the four weeks of September included 1,062 from diarrhœa, 256 from scarlet fever, 221 from diphtheria, 221 from whooping-cough, 218 from "fever" (principally enteric), 127 from measles, and 1 from small-pox; in all, 2,106 deaths were referred to these principal zymotic diseases, equal to an annual rate of 2·9 per 1,000, which was considerably below the average for the corresponding periods of the seven preceding years, 1882–88. The death-rate in London last month from the principal zymotic diseases was equal to 2·2 per 1,000, while in the 27 provincial towns it averaged 3·4, and ranged from 1·4 in Birkenhead, 1·9 in Nottingham and in Halifax, and 2·1 in Oldham, to 5·1 in Blackburn, 5·5 in Newcastle-upon-Tyne, 8·6 in Preston, and 11·5 in Plymouth.

Diarrhœa was the most fatal zymotic disease in the 28 towns during the month under notice. The rate of mortality from this disease, which had been 3·26 and 2·45 per 1,000 in the two preceding months, further declined to 1·45 during September, and, with one exception, was considerably below that recorded in the corresponding period of any of the seven preceding years, 1882–88. In London the death-rate from diarrhœa was only 0·87 per 1,000, while it averaged 1·94 in the 27 provincial towns, among which this disease showed the highest proportional fatality in Wolverhampton, Hull, Newcastle-upon-Tyne, Blackburn, and Preston. The rate of mortality from scarlet fever, which had been 0·30 and 0·28 per 1,000 in the two preceding months, rose again to 0·35 during September, but was 0·08 per 1,000 below the average in the corresponding periods of the seven preceding years, 1882–88. In London the scarlet fever death-rate was 0·25 per 1,000, while it averaged 0·44 in the 27 provincial towns, and was highest in Blackburn, Bolton, and Plymouth. The death-rate from diphtheria, which had been 0·29 and 0·26 per 1,000 in the two preceding months, rose again to 0·30 during the month under notice, and considerably exceeded that recorded in the corresponding period of any of the seven previous years. In London the rate of mortality from this disease was as high as 0·48 per 1,000, while in the 27 provincial towns it averaged only 0·16, and was highest in Preston and Derby. The death-rate from whooping-cough, which had declined from 0·69 to 0·31 per 1,000 during the five preceding months, further fell to 0·30 during September; and, with one exception, was lower than in the corresponding period of any of the seven preceding years, 1882–88. In London the death-rate from whooping-cough was equal to 0·28 per 1,000, while it averaged 0·32 in the 27 provincial towns, among which this disease showed the highest proportional fatality in Bradford, Bolton, and Sunderland. The rate of mortality from "fever," which had been 0·19 per 1,000 in each of the two preceding months, rose to 0·30 during the month under notice, but was below the average rate in the corresponding periods of the seven previous years. In London the rate of mortality from "fever" did not exceed 0·23 per 1,000, while in the 27 provincial towns it averaged 0·35, and was highest in Portsmouth, Norwich, Nottingham, and Preston. The death-rate from measles, which had steadily declined in the six preceding months from 0·97 to 0·29 per 1,000, further fell to 0·17 during September, a lower rate than in the corresponding period of any of the seven previous years, 1882–88. In London the measles death-rate was only 0·09 per 1,000, while it averaged 0·25 in the 27 provincial towns, among which this disease showed the highest proportional fatality in Preston, Sunderland, and Newcastle-upon-Tyne. A fatal case of small-pox was recorded in Sheffield during the month under notice, but not one in London or in any other of the 28 large towns; and no small-pox patients were under treatment during September in any of the Metropolitan Asylum Hospitals.

The rate of infant mortality in the 28 towns, measured by the proportion of deaths under 1 year of age to registered births, which had been 243 and 207 in the two preceding months, further declined to 170 during September, and was below the average rate in the corresponding periods of the seven preceding years. In London the rate of infant mortality did not exceed 139 per 1,000, while it averaged 195 in the 27 provincial towns, and ranged from 126 in Huddersfield, 129 in Derby, and 138 in Portsmouth, to 247 in Halifax and in Sunderland, 251 in Hull, 273 in Preston, and 288 in Blackburn.

The death-rate from diseases of the respiratory organs, judged by the metropolitan returns, was below the average during September. The weekly number of deaths referred to these diseases in London averaged 156, and the annual death-rate was equal to 1·9 per 1,000.

The causes of 258 of the 12,435 deaths registered in the 28 towns during the four weeks of September were not certified, either by registered medical practitioners or by coroners. These uncertified deaths were equal to 2·1 per cent. of the total deaths, which corresponded with the proportion in the preceding month. In London the proportion of uncertified deaths was 1·1 per cent., while in

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the 27 provincial towns it averaged 2·7 per cent. The cause of only 1 death was uncertified during last month in Brighton, in Portsmouth, and in Norwich; among the other towns the largest proportions of uncertified deaths were recorded in Salford, Sheffield, Cardiff, and Liverpool.

Among the population living in the outer ring of suburban districts around London, estimated at upwards of one and a quarter million of persons, the annual death-rate from all causes during September did not exceed 13·3 per 1,000, and was below that recorded in the corresponding period of any of the seven preceding years, 1882–88. During the four weeks ending September 28, 87 fatal cases of diarrhœa, 25 of scarlet fever, 25 of whooping-cough, 24 of diphtheria, 18 of "fever" (principally enteric), 7 of measles, and not one of small-pox, were recorded in the outer ring; in all, 186 deaths resulted from these principal zymotic diseases, equal to an annual rate of 1·9 per 1,000, which was considerably below the average in the corresponding periods of recent years. Compared with the preceding month, the fatality of scarlet fever, diphtheria, and "fever" showed an increase, while that of whooping-cough and diarrhœa showed a decline. Of the 25 deaths from scarlet fever, 8 occurred in West Ham sub-district, and 6 in the district of Brentford. The 24 fatal cases of diphtheria included 2 in Tottenham, 3 in Hillingdon, 3 in Chigwell, and 4 in West Ham sub-districts; 3 deaths from measles were recorded in Harrow, and 6 of "fever" in West Ham sub-districts.

NOTIFICATION OF INFECTIOUS DISEASES
IN 43 URBAN SANITARY DISTRICTS.

The table on page 187 contains uniform statistics relating to sickness and mortality in forty-three of the fifty-six urban sanitary districts of England and Scotland in which the notification of infectious diseases is compulsory. The population of the towns for which we are enabled to publish complete statistics for the month of September is estimated at upwards of four millions of persons. The annual rate of mortality from all causes in these towns during the month under notice averaged 17·4 per 1,000, against 18·4 and 17·8 in the two preceding months. This death-rate slightly exceeded the mean rate last month in twenty-eight of the largest English towns, which was 17·0 per 1,000. The rates of mortality during the month under notice were considerably below the average in Leek, Willesden, Heywood, Guildford, Reading, Llanelly, and Burton-on-Trent; while they showed an excess in Burnley, Warrington, Preston, Ripon, and Stafford. The death-rate from the eight infectious diseases dealt with in the table averaged 0·97 per 1,000, against 0·66 and 0·65 in the two preceding months. No deaths from any of these infectious diseases were registered during the month in Burton-on-Trent, Darwen, Guildford, Lancaster, Leek, Leicester, Ripon, or Weymouth; whereas they caused the highest death-rates in Portsmouth, Salford, Bolton, Preston, West Ham, and Burnley. Scarlet fever showed the highest proportional fatality in Oldham, West Ham, Blackburn, and Bolton; diphtheria in Salford and Derby; enteric fever in Preston and Burnley; measles in Dewsbury, Burnley, Preston, and Warrington; whooping-cough in York and Warrington; and diarrhœa in Jarrow, Blackburn, Burnley, and Preston. Four deaths from puerperal fever were recorded in Manchester, 3 in West Ham, 2 in Barrow-in-Furness, 2 in Burnley, and 2 in Huddersfield. With reference to the notified cases of infectious diseases in these towns during September, it appears that the proportion of the population reported to be suffering from one or other of the eight diseases specified in the accompanying table was equal to 9·0 per 1,000, against 4·4, 5·1, and 6·4 in the three preceding months. No case of any of these diseases was reported during the month under notice in Ripon, and only one in Weymouth; and while the proportion did not exceed 2·0 per 1,000 in Accrington, Greenock, Heywood, Llanelly, Reading, or Stafford, it ranged upwards in the other towns to 15·2 in Salford, 15·5 in West Ham, 15·8 in Portsmouth, 21·1 in Wakefield, and 24·1 in Burnley. Scarlet fever was proportionally most prevalent in Derby, Edinburgh, Portsmouth, Darwen, West Ham, Wakefield, and Bolton; diphtheria in Manchester, West Ham, Norwich, Salford, and Willesden; and enteric fever in Portsmouth, Ashton-under-Lyne, Wakefield, Preston, York, and Burnley. Three cases of small-pox were notified during September in Leek, but not one in any other of the forty-three towns. Four cases of puerperal fever were notified in Manchester, and 3 in West Ham.

During the third quarter of the current year the rate of mortality in these urban sanitary districts was equal to 18·1 per 1,000, which was 0·5 below the mean rate for the same period in the twenty-eight large English towns. With regard to the proportion of deaths to notified cases during the three months ending September last, it appears that the mortality from scarlet fever was equal to 6·4 per cent. of the cases notified; from enteric fever to 15·0 per cent., and from diphtheria to 26·2 per cent. The proportion of deaths to notified cases of scarlet fever and of enteric fever showed a further decline from that recorded in the two preceding quarters, while that of diphtheria showed a slight increase.

ILLUSTRATED SANITARY PATENTS.

7,362. (1888.) Improvements in Baths and Washing Utensils. George John Flamank, 39, Wolverhampton Road, Stafford.

The object of this invention is to supply and affix to baths and washing utensils, when in use, convenient movable adjustable receptables for holding soap, sponge, &c.

This is effected by providing a soap-dish or tray formed with a strip of sufficient length and strength, and bent or made so as to slip over the edge of the bath. The means of attachment vary, of course, according to the form or shape of the bath, tub, or other utensil to which it is desired to affix the tray or soap-dish.

The dishes are preferable made deep rather than wide, so as to take the soap edgeways, and not project too far into or outside the vessel, and also so as to be immediately attached or detached.

The dishes may be made of glass, metal, porcelain, wood, or any other suitable material or combination of suitable materials.

Claim. — The improvement in baths and washing utensils by affixing to them temporarily, when in use, movable and adjustable receptacles for soap and sponge.

15,178. (1888.) Improvements in Apparatus in Combination with Water Waste Preventers. Alfred Robinson, 38, Great Smith Street, Westminster. [8d.]

The object of this invention is to construct a simple apparatus in combination with water waste preventers, which will both discharge and refill itself by one downward motion of the lever, and can be operated in several ways, either by hand or by an automatic movable seat action, a door action, or by the action of unlocking of a door.

A cistern is constructed with an outlet at the bottom. Inside the cistern, in connection with the outlet, is a valve with a syphon attached, and from the outlet a pipe of less diameter than the valve which leads to the pan or place to be flushed. Above the syphon, projecting from a pivotted spindle, which same rotates between a bracket fixed on top of cistern, is used a lever or quadrant, with an extended arm on each end, one arm running over the top of the cistern, to which a chain, wire, or rod is attached, and to the other arm a counter-weight. In the quadrant is a slot, the top of which is widened to form a ledge or rest, and beyond the slot are two pins or guides.

The quadrant and syphon are coupled by a link. The sides of the link are extended open, and carried beyond

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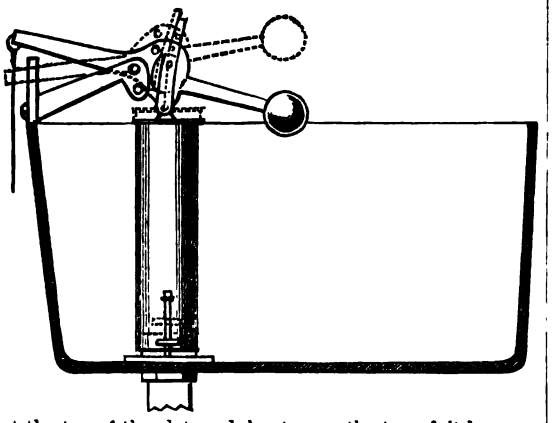
the top of the quadrant, and allowed to pass between the two pins or guides before-mentioned.

When the apparatus is worked by hand the one arm of the quadrant is raised and the weighted arm is lowered, resting on a stop formed in the bracket. Whilst the extended arms of the quadrant are in this position the top part of the link connecting syphon with quadrant is above the ledge or rest formed



at the top of the slot, and kept over the top of it by one of the pins or guides on the quadrant. By pulling the rod or chain the quadrant partly rotates, at the same time raising the syphon and valve by means of the link resting on the ledge at the top of the slot; but before the lever is quite pulled down the pin at the other side of the link drops down the slot.

In this manner the valve cannot be held open by holding the chain down, but falls again by its own weight; thus when the syphon is being raised and before it can drop again, sufficient water passes the valve to draw it over the syphon which runs until the cistern is empty and immediately fills again by the ball valve in the usual way.

There are several variations and additions to this apparatus in order that it may be worked by the other motive agents mentioned above.

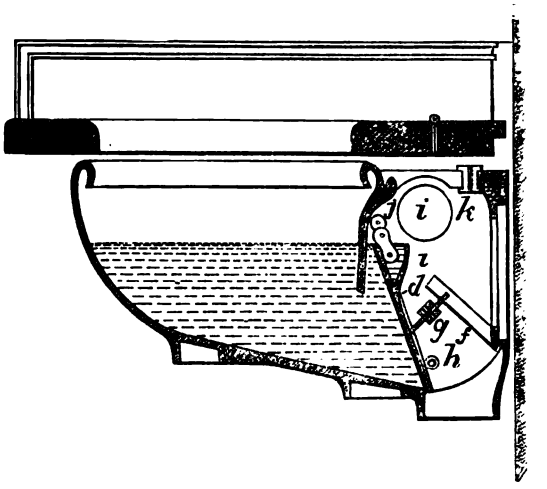
Claim.—The combination of the apparatus to be fixed to a water waste preventer which will both discharge and refill itself by one downward motion of the lever, operated as described, and generally as described above.

6,418. (1889). IMPROVEMENTS IN WASTE FITTINGS FOR CLOSETS, URINALS, SINKS, AND THE LIKE. JAMES HARRIS, 2, Dunster Gardens, Brondesbury, London, N.W. [6d.]

This invention consists in the simple construction and arrangement of an outlet valve in connection with water-closets, urinals, sinks, and the like purpose where the apparatus used is required to be entirely emptied of its contents and flushed with water after which to retain a requisite quantity of water in the pan or apparatus for the purpose of forming a sealed trap to prevent the ingress of sewer gas into the house. And the same is carried out as follows:—

In the figure *d* is the improved valve, *f* cushioning, *g* weight or counter balance, *h* ring for connecting valve with plug, *i* vent-hole for escape of sewer gas, *j* chain hinge for attaching the valve to the pan, *k* is the hole for receiving plug lever.

The valve *d* acts as follows: When the valve is opened by means of the plug it closes the escape hole for gas *i*, and allows the sewage to pass out of the pan down the soil-pipe, and when the said valve returns to its closed position it prevents the water from passing out of the pan until it has reached its level or height of the valve and so retains a certain quanity of water in the pan and forms a sealed trap. If desired the valve may be provided with a regulating plate for the purpose of increasing the quantity of water to be retained in the pan. The opening and closing of the valve may be carried out by means of a



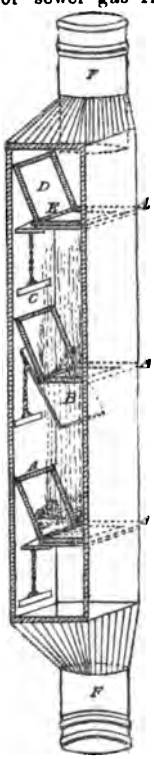
pulley and weight, or by means of a crank as now in use. A suitable cushion is provided either on the valve itself or on the pan consisting of india-rubber or like material for the purpose of breaking the force of the valve when opening and shutting. The said valve or *d* trap may be made of any suitable metal or material.

This trap or valve may be advantageously applied to urinals.

Claim.—The construction and arrangement of the valve *d* in combination with the vent-hole *i*, cushioning *f*, &c, as described and for the purpose set forth.

9,726. (1889.) IMPROVED DISCHARGE PIPE FOR WATER-CLOSETS. F. BOLUS, 47, Western Road, West Brighton.

The object of this invention is the perfect prevention of sewer gas rising in water-closets. It consists of a rectangular tube, as shown in the figure, which is inserted in a vertical part of the existing discharge pipe, either in the basement or exterior of the house, so that where two or more closets are drained by the same discharge pipe it will serve for the whole.



Within this rectangular tube three valves are provided, hinged so as to open downwards, and weighted so as to regain the closed position after the sewage has passed down through them. B shows one of the valves opened. The valve is hinged to a sloping shield D, which is provided to prevent any sewage from lodging at the back of the hinge of the valve. This shield, as well as the valve seating, is provided with a rim, to ensure the whole being perfectly air-tight, as shown by A. C represents the weights by means of which the valve, after being opened by the downward course of water or sewage, is closed again. F F are cylindrical pipes at either end of the rectangular tube for connection with the main body of the existing discharge pipe.

When the apparatus is in operation, as the second valve opens, the first one closes, and the same with the second and third, thus preserving a completely air-tight trap. The action is, of course, quite automatic, whilst the whole lends itself to thorough flushing agents.

Claim.—The apparatus complete as described, with its advantages of effectiveness and cheapness, and the ease with which it may be applied to any existing water-closet or other discharge pipe in which there is a danger of foul gases rising.

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LIST OF APPLICATIONS FOR PATENTS
RELATING TO SANITATION.

FROM SEPT. 2, 1889, TO SEPT 30, 1889.

[*This List is specially compiled for the* SANITARY RECORD *by Messrs. Rayner & Cassell, Patent Agents, 37, Chancery Lane, Holborn, from whom all further information relating to Patents may be had on application, gratuitously.*]

September 2.—No. 13,798. BENNO BRUNO REIMANN, 64, Peckham Park Road, Old Kent Road. Encyclopedic toilet papers.

September 4.—No. 13,953. CHARLES CRABTREE, 6, Bream's Buildings. Improvements relating to drain pipes.

September 5.—No. 13,980. RODERICK MACDONALD, 96, Buchanan Street, Glasgow. Improvements in and relating to syphon valve cisterns for the flushing of water-closets or other purposes, and appliances therefore.

September 7.—No. 14,145. PETER HOY & JNO. JONES, 223, High Holborn, London. Improvements in or relating to drainage.

September 9.—No. 14,175. JAMES ALEXANDER BEATTIE, 62, St. Vincent Street, Glasgow. Improvements in ventilators.

No. 14,219. BEN POTTER & WARWICK CHARLES STEELE, 53, Chancery Lane, London. Supplying to a water-closet basin, or other flushing cistern, or to water-carts, a disinfecting fluid.

September 10.—No. 14,237. WILLIAM PHILLIPS THOMPSON, 6, Lord Street, Liverpool. Improvements in and appertaining to flushing apparatus. (Albt Wilhelm Maraun, Germany.)

No. 14,250, SYDNEY PEDRICK WOOD, Market Street, Torquay. For an invention for use as a slop pail and commode combined, to be known as "The Torquay patent self-acting slop pail."

No. 14,292. JNO. PROCTOR, 24, Southampton Buildings, London. An improved oxidising agent, applicable especially to disinfecting sewage and other waters, and in the mode of preparing the same.

September 13.—No. 14,434. MATTHIAS ROBINSON, 61, Southgate Street, Winchester, Hampshire. Soaping and sponging combined when washing and bathing, and to be named "The soap and sponge 'em."

September 14.—No. 14,488. JAS. DUCKETT & ALF. DUCKETT, 8, Quality Court, London. Improvements in and relating to waste water-closets.

September 16.—No. 14,582. ROBERT SODERQUIST, 115, Cannon Street, London. New or improved apparatus for purifying water.

September 18.—No. 14,712. GEO. EDWARD DAVIS, 301, Great Clowes Street, Manchester. Improvements in water purifying apparatus.

No. 14,734. FRANK PULLEN CANDY, 7, Staple Inn, Middlesex. Improvements in the deodorization and purification of sewage and other polluted matter.

September 19.—No. 14,779. JOSEPH COUCH KENT, 40, Stamford Hill, Stoke Newington. Improvements in automatic disinfectors for supplying disinfectors to urinals, closets, and drains.

No. 14,787. ALFRED WILLIAM MICHELL, 3, Prospect Terrace, St. John's Road, Chelmsford. An improved joint for drain or other pipes, and sanitary goods.

September 21.—No. 14,899. ALEXANDER FINDLEY MORRISON & MATTHEW INGRAM, The Hygeia Works, Manchester. Improvements in water-closet apparatus.

No. 14,914. WILLIAM GODSON LITTLE, Blendon Cottage, Bexley, Kent. Improvements in soap.

September 23.—No. 14,951. EDWIN ACKROYD, 20, Charles Street, Bradford, Yorkshire. Improvements in filters. (Edmund Ackroyd, New Zealand.)

No. 14,985. PERCIVAL WALTER ST. GEORGE, 24, Southampton Buildings, London. An improved street gully.

September 26.—No. 15,171. CHAS. EDWARD PERCY GABRIEL, 12, Cherry Street, Birmingham. Improvements in syphon cisterns for flushing water-closets and other similar purposes.

THE Portuguese Government is empowered to make contracts for the drainage of Coimbra on the Berlier or any other system which may seem preferable.

NOTIFICATION OF INFECTIOUS DISEASES.—The Plymouth County Council and the Dartmouth Town Council have adopted the Infectious Diseases (Notification) Act.

NEW INVENTIONS.

NEW PERFECT COMBUSTION GAS-BURNER.

IT would appear that at last the great objections to the use of gas stoves, either for heating or cooking purposes, that have hitherto been held, on account of both the unpleasant odour and unhealthiness of the fumes caused by the incomplete combustion of the gas, are about to be surmounted.

Messrs. Terreneau & Co., of 123, Pall Mall, S.W., are now introducing a very simple but efficient attachment, to be fixed to the burners of gas stoves of all descriptions, which so perfectly equalises the proportions of air and gas, and so thoroughly regulates their combination and supply to the burner, that a perfect combustion is secured, the whole of the gas being consumed, with an entire absence of the slightest smell or escape of any noxious or unpleasant product into the air of the room where it is used. This simple apparatus is the invention of Mr. Henry Cox. So perfect is the combustion of the gas, that it is claimed a gas stove with a Cox's attachment can be used for warming the apartments of persons with the most delicate and sensitive lungs.

The difficulty that has been experienced in overcoming the unpleasant and unhealthy fumes that have accompanied the use of many makes of gas stoves is perhaps the principal reason why they have not been almost universally adopted for cooking. That difficulty need no longer exist; and as the patent burners can be attached to any stove at the mere cost of the burner itself, no one need now suffer from the effects of unconsumed gas or unpleasant odours. Mr. Cox's appliance may almost be described as the one thing needed to make a gas stove perfect, either as a heater or cooking apparatus, and we recommend all medical men, and those who are interested in sanitary reform to go and see the stoves in action at Pall Mall. We are informed that Messrs. Terreneau intend exhibiting stoves both for cooking and heating at the Brewers', the Food and Cookery, and also the Cattle Shows to be held at the Agricultural Hall, Islington, during the next few weeks. The "Boudoir" stove for warming halls and rooms, introduced by Messrs. Terreneau is a very pretty and compact affair, and can be fitted with appliances for boiling water, and, if required, cooking an early breakfast or late supper. The "Boudoir" is finished in black japanned iron, white enamel, or nickel plated so as to suit all tastes and all purses.

PARLIAMENTARY PAPERS ON SANITARY SUBJECTS PUBLISHED SINCE AUGUST 15, 1889.

(*To be had of* Messrs. P. S. KING & SON, 5, *King Street, Westminster, S.W.*)

Artizans' Dwellings.—Return of Houses reported as unfit for Human Habitation in 1883 to 1888, and of the Proceedings taken under the Artizans and Labourers' Dwellings Acts..... 1d.

Births, &c. Ireland.—Report of the Registrar-General of Births, Deaths, and Marriages in Ireland for the year 1888. 25th Annual Report. 8vo. ... 1s. 6d.

Diphtheria.—Mr. Spear's Report to the Local Government Board upon the Prevalence of Diphtheria in the Penistone Registration Sub-District, and upon certain Occurrences therein of Enteric Fever (No. 46)..... 6d.

Enteric Fever.—Dr. Gresswell's Report to the Local Government Board on the Sanitary Condition in the Rural Sanitary District of Stourbridge, and on the recent Prevalence of Enteric Fever there. (No. 45) ..... 3d.

India.—Report on Sanitary Measures for the year 1887-88. Vol. XXI..... 1s. 6d.

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Inebriates.—Ninth Annual Report of the Inspector of Retreats under the Inebriates' Acts, 1879 and 1888, for the year 1888, with Appendix, New Rules, &c. ..... 2d.

Lunacy.—Report of Committee on the Lunacy Acts Amendment Bill ..... 2d.

——Thirty-first Annual Report of the General Board of Commissioners in Lunacy for Scotland, with Appendices. 8vo. ..... 1s. 3d.

——Thirty-eighth Annual Report on Lunatic Asylums in Ireland, with Appendices. 8vo.... 7d.

London Cemeteries.—Area, Number of Interments, &c. &c ..... 1d.

Sanitary Regulations.—Special Report from the Select Committee to whom were referred all Private Bills promoted by Municipal and other Local Authorities, by which it is proposed to create Powers relating to Police and Sanitary Regulations which deviate from, or are in extension of, or are repugnant to the General Law ..... 5d.

Acts. Session 1889.

51.—*General Police and Improvement, Scotland*..... ½d.
72.—*Infectious Diseases Notification* ..... 1½d.
50.—*Local Government, Scotland*..... 10½d.
41.—*Lunacy Acts Amendment* ..... 8d.
64.—*Public Health, Cholera Prevention* ..... ½d.
11.—*Sale of Horseflesh, &c., Regulation*..... ½d
14.—*Town Police Clauses* ..... ½d.
21.—*Weights and Measures* ..... 2½d.

POLICE COURT CASES.

SALE OF FOOD AND DRUGS ACT (1875).

Adulterated Milk.

At the Exeter Police Court, before Messrs. G. Franklin (Chairman), J. Knapman, and C. Westron, John Hill, a dairyman was charged with selling adulterated milk. Mr. G. R. Shorto prosecuted, and Mr. Brown defended.

Mr. Shorto, in stating the facts of the case, said that he might mention that the inspector took six samples of milk on the day in question, and four of them he found to be adulterated.

John Wreford, inspector of nuisances for the City of Exeter, said he saw Mr. Hill delivering milk on the day in question. He asked for a pint of milk, which was supplied from a small can. He saw Mr. Hill supplying Mr. Daw from the can, and he asked for a pint of milk from the same can. Mr. Hill hesitated at first, and then said it was scald milk. He was ultimately served with the milk, and he then asked Mr. Daw if he thought he had bought new milk, and he replied in the affirmative. He supplied the public analyst with one sample, and he reported that it contained 13 per cent. of water.

The Chairman said: Mr. Hill, we have not the least doubt that the charge brought against you has been proved, viz. that of selling milk with a certain amount of water, as laid by the Town Clerk. The cases have been very plentiful of late, and no one but the public are the sufferers. You will have to pay 40s. and costs.

Charles Sclater, dairyman, was summoned for supplying milk, the same being adulterated with water.

Mr. Wreford said he took a sample of the milk being supplied to the Exeter Workhouse on August 23. He supplied a portion to the public analyst, and he reported that the milk contained 10 per cent. of water.

Mr. Brown made an application that both samples, the one kept by the officer and the one kept by his client, should be analysed by the authorities at Somerset House. This was done; but, unfortunately, defendant's sample was broken on the way, although securely packed. The other bottle was analysed, and found to contain 8 per cent. of water.

The Chairman of the Bench said: That the magistrates had carefully gone into the case, and came to the decision that, as the analysis made at Somerset House practically confirmed the decision of the city analyst, the Bench considered the case proved, and fined defendant £1 and expenses.

Only 80 per cent. of Chicory!

At the Liscard Court House, Messrs. J. and T. Edwards, of Brighton Street, Egremont, were summoned on the information of Superintendent Hindley, that they did sell to a person a certain quantity of coffee which was not of the nature and substance demanded.

Constable Tudor stated that he went into the defendant's shop, and amongst other articles asked to be supplied with a quarter of a pound of coffee, for which he paid threepence. On receiving the coffee, he told the young man who served him that he had bought it in order to have it analysed, and divided the coffee into three equal parts, sealed them up, and numbered them.

Mr. J. Edwards: Was there not a label on the packet of coffee?

Witness: Yes. It said at the bottom that it was a mixture of coffee and chicory.

Superintendent Hindley deposed to receiving the coffee and sending it to Dr. Carter Bell, on the same day, for analysis. He received the report as follows:—"The coffee is adulterated with 80 per cent of chicory."

Mr. Edwards said that pure coffee, which cost 1s. 3d. to 1s. 4d. per pound in the wholesale market, could not be reasonably expected to be retailed at 1s. per pound. He had sold coffee for many years in the same way; and the practice was followed all over the country.

Major Chambres (in giving the decision of the Bench) said that according to the law the fact of coffee being sold as a mixture did not save the person from being brought up for fraud. However, they would not impose a penalty, as they thought it would be a sufficient punishment when it became known that the defendants had so adulterated their coffee.

PUBLIC HEALTH ACT (1875).

Exposing Diseased Meat for Sale.

At the Summons Court, Guildhall, Nottingham, before Messrs. S. Butler and S. H. Sands, Isaac Davis Clay, of 53, Cross Street, was charged with unlawfully exposing for sale in the Cattle Market on September 11, a diseased cow, the flesh of which was unfit for human food. The facts of the case, as stated by Mr. Harris (of the Town Clerk's office), were that on September 11, a cow was brought into the Cattle Market. The animal was noticed on its entrance by the inspector, who even from a cursory glance could see that it was in a very bad condition, ill, and quite unfit for food. The attention of other officials was called to the cow, and Mr. Taylor, veterinary surgeon, whose advice was sought in regard to the case, had given it as his opinion that the animal was ill, and that it was suffering from tuberculosis. The beast was afterwards slaughtered, and the condition of the flesh was found to bear out Mr. Taylor's surmises. The man who brought the cow into the market had made a statement showing that his master (Clay) was its owner. All the witnesses called for the prosecution, including Dr. Whitelegge, said that the flesh of the animal was unfit for food. The defendant said that he bought the cow from Mr. H. A. Smith, of Wilford, three weeks ago. It was not to be supposed that a gentleman who had been High Sheriff of the county would sell him a diseased beast. That gentleman, moreover, had had milk from it the day before it changed hands. Mr. Butler, the chairman, said that the case was a very bad one, and it had been proved to the satisfaction of the Bench that the cow was diseased. The defendant would be fined £15, or two months' imprisonment.

Diseased Meat.

At the Borough Court, Bolton, Mrs. Alice Gleave, tripe dealer, Deansgate, was charged with having 17 beasts' elders and a beast's stomach which were unfit for food, in her possession. The Town Clerk (Mr. R. G. Hinnell), prosecuted on behalf of the Corporation, by whom the proceedings had been instituted. The Town

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Clerk explained that Mrs. Gleave carried on a very extensive business of tripe dealing and dressing at Church Wharf, and for the purpose of her trade imported from Ireland large quantities of entrails which were brought in bags on a lorry from the railway to the entrance of her premises. The contents of the bags were then emptied into a barrel which was in charge of the foreman of the works. Amongst the entrails were a number of cows' elders or udders, and these were dressed for food at the same place as the tripe. A quantity of fat was also brought from Ireland, but that was not made up for food, being melted down to tallow in another part of the premises. Inspector Wagstaffe, after previously warning the defendant, visited her place of business on September 10, and saw a lorry drawn up to the entrance of the works, and entrails being unloaded into barrels belonging to Mrs. Gleave. At his request a servant brought a number of udders from the building in which tripe dressing was carried on, and on examining them the inspector found them to be infected with tuberculosis. They were retained, examined by the medical officer, condemned, and ordered to be destroyed. Mrs. Gleave employed agents in Dublin to purchase the entrails, &c., and these were to be considered in the light of servants, therefore the moment they got into the possession of the agent they were in Mrs. Gleave's possession. Mrs. Gleave, on being questioned, said the udders were not intended for food until they were carefully examined by her foreman. Inspector Wagstaffe gave evidence confirming the Town Clerk's statement, and Dr. Sergeant (medical officer of health) also gave corroborative testimony as to the diseased condition of the entrails. Mr. Byrne, barrister, of Manchester, for the defence, admitted that the udders were unfit for food, but contended that they were not intended for consumption, a line of defence which, if proved, would entitle him to acquittal. His clients had not had time to even examine the meat when the inspector appeared on the scene. William Gleave, a brother-in-law of Mrs. Gleave, stated that for some time he had been in the habit of visiting the works, and had given instructions for the meat to be carefully examined, and if in any way diseased to be destroyed. The Dublin agent was authorized to procure good meat. James Swarbrick, employed by the defendant, stated that he had strict orders not to prepare anything for food which was not right. Henry Callon, also an employé of the defendant, stated that the udders were always examined before being taken into the food place. The udders in question had not been into that part of the premises, as they were not examined. Nathaniel Green also gave similar evidence, stating that the bad udders were ordered to be placed in the tallow vat. The presiding magistrate (Mr. R. N. Cottrill) observed that he and his colleague had given this case their very serious consideration, and could come to no other conclusion than that the defendant was "guilty." Taking into consideration the magnitude of Mrs. Gleaves' business, and also the evil results from the distribution of bad meat throughout the borough, they could do no other than inflict a heavy penalty—that of £1 per piece of meat, or £19 in all, and the costs of the case.

Unsound Fish.

Robert Hewitt, 120, Blackburn Street, at the same court, was charged with having three pieces of unsound fish in his possession on September 16. The Town Clerk prosecuted. Inspector Wagstaffe visited the defendant's premises on the date mentioned and found three pieces of skate, weighing 8 lbs., exposed for sale in the window along with a quantity of other fish. The skate was bad, and was ordered to be destroyed. The defendant urged that the fish was not intended for sale, and had been inadvertently placed in the window by a lad. A fine of 2s. for each piece was imposed, with the costs.

Alleged Unsound Meat.

At the Scarborough Borough Police Court, before Mr. Thomas Whittaker and other magistrates, William Thompson was summoned for unlawfully exposing for sale two legs of mutton, which were diseased and unwholesome. The town clerk (Mr. Geo. Dippie), who appeared for the prosecution, said the action was taken under the Public Health Act, 1875. Mr. Appleyard appeared for accused.

Mr. James Bastiman, inspector, said that on Thursday, September 12, he saw two legs of mutton on defendant's stall at the Market Hall exposed for sale, which to his mind were not sound. The meat was wet and flabby, and he took possession of it, and reported it to the medical officer of health (Dr. J. W. Taylor), who afterwards condemned it. It was also seen by Mr. J. W. Teale, one of the justices, who also stated that it was unfit for human food.

Mr. Taylor, medical officer of health, said he saw a leg of mutton, and a leg and a loin. It had been a very "muggy" night and the morning was also so. He did not discover any traces of disease in the meat, although he had examined it carefully. In his opinion, however, the meat was unfit for food and unwholesome, being so clammy. He did not think the meat was sound the night before, much less at the time of the seizure by the officer, who, in his opinion, was fully justified by the condition of the meat in the action he had taken.

Mr. Teale said he saw the meat on the afternoon in question. and he considered it unwholesome and unfit for food. He felt that the action of the inspector was fully justified by the condition of the meat. In his opinion the sheep was diseased at the time it was killed, as he thought it utterly impossible that a kidney should stink so badly as it did in the time from death. A sound sheep would not be in such a bad condition as he found it.

Mr. Bastiman was again recalled, and said defendant asked to be permitted to submit the meat to his own medical man. Witness did not put any impediment in the way of this being done.

The Town Clerk said the law on the point was that defendant could not call in any other medical opinion, but the justice called in to certify the meat unsound was the only party who could do so.

Defendant was fined 20s. and costs.

Offence against the Public Health Act.

At the Wallasey Petty Sessions, John Povall, of 16, Victoria Road, New Brighton, was summoned by the Wallasey Local Board for not abating a certain nuisance on his property, No. 3, East View, Seabank Road, Liscard, now in the occupation of Mr. J. Ross Brown, barrister-at-law. It appeared that on June 14 last complaint was made by the occupier of the house that the pan-closet inside the house was in a foul condition, that the flush of water was insufficient, and that the closet in the yard had a defective hopper, and that the flush was insufficient. There were also defects in the pipes.

Mr. Danger, solicitor to the Local Board, having proved the serving of notices upon Mr. Povall requiring these defects remedied within a certain time, asked that a substantial penalty might be inflicted, as the defects were very serious.

Mr. Salmon, the Surveyor to the Local Board, stated that a complaint was made at his office on June 14 last, in respect of the bad state of certain closets in No. 3, East View, Seabank Road. The house was inspected and the inside closet was found in a foul condition, the yard closet with a bad description of hopper, and both with insufficient flush. The soil pipe was insufficiently ventilated, and the bath gully untrapped and otherwise defective. A notice was served upon the owner to abate the nuisance, and reported to the Health Committee. He visited the premises on the 12th of the present month, and found the defects still existed.

Mr. Povall said the houses had been built nine years, and up to the present time the sanitary arrangements were considered in good condition.

Mr. Ross Brown, the occupier of the premises, in reply to the defendant, stated that the flush was insufficient, and that disinfectants had to be used to keep down the

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smells which emanated from the closets. When he took the house Mr. Povall undertook to put in a modern water-closet.

The Bench considered that the defects should have been remedied long ago. The defendant would be fined £1 10s. 6d., including costs, and the necessary alterations would have to be carried out in accordance with the terms of the notice within seven days.

REVIEWS.

The Elements of Vital Statistics. By ARTHUR NEWSHOLME, M.D., Lond. Swan Sonnenschein & Co.

DR. NEWSHOLME'S book is designed to supply an undoubted want which has long been felt by students of vital statistics, by medical practitioners intending to devote themselves to public hygiene, and by newly-appointed medical officers of health. In his preface the author describes how, on his first appointment as medical officer of health, he experienced great difficulty in obtaining trustworthy guidance in the statistical portion of his duties. He found that "the chief, if not the only, sources of trustworthy information were the official reports of the Registrar-General and some scattered articles in encyclopædias, and in the transactions of learned societies." As a student, therefore, he set to work to get up the subject, and "from the notes gradually accumulated during the years which have since elapsed," he has prepared the present guide to the subject. The attempt to acquire a thorough knowledge of a subject like vital statistics, and simultaneously to prepare a guide to the subject for the use of others, is ambitious, and almost invites failure. Under these somewhat unfavourable conditions, Dr. Newsholme may, therefore, be congratulated on having produced a book which, notwithstanding inevitable defects, will undoubtedly be useful to those who are engaged in studying the subject. The book, although bearing unmistakable signs of the want of a firm and thorough grasp of the subject, is, on the most essential points, sound and trustworthy. Those who read it carefully and intelligently may learn, under the author's direction, to detect and avoid "a large mass of statistical information which is untrustworthy in its methods of compilation and arrangement, and fallacious in its inferences." It is no depreciation of this book to point out that it is in the main a rearranged *précis* of the memorial volume of selections from the writings of the late Dr. Farr, which, under the title *Vital Statistics*, was published in 1885 by the Sanitary Institute. The memorial volume contains the cream of the statistical contents of Dr. Farr's invaluable contributions to the Reports of the Registrar-General, and if Dr. Newsholme has, as he suggests in his preface, gone to the fountain-head and made his own selection, his work affords a singular corroboration of the selective judgment of the editor of the volume issued by the Sanitary Institute. This volume is probably too bulky and too costly to meet the requirements of the student, and Dr. Newsholme was undoubtedly wise in recognizing the demand for an abridgement, and its publication at a moderate price. It is stated in the preface that in dealing with this subject "the substantive facts must be derived chiefly from the Registrar-General's Reports; and when it is not otherwise stated, the reader may assume that the facts adduced in the following pages are derived from the same source." Notwithstanding this general statement, it appears to us that the value of the work would have been much increased by more frequent notes and references to statements of fact and opinion in the work which we recognize as extracted from Dr. Farr's *Vital Statistics*, or the official reports in which the selected portions were originally published. The student, however, would often be glad to know more definitely the source of the facts quoted, and whether the opinions are those of the author, or, if not, the authority on which they are given.

Putting aside defective details for the present, we should point out what we conceive to be two obvious drawbacks to the book, looked at from the point of view of the students for whose use it is more especially designed. In the first place, the book gives very indefinite, and in some respects inaccurate, descriptions of the main sources of our information on vital statistics—that is, of our system of census enumeration and of civil registration of marriages, births, and deaths. In the second place, that part of the subject dealing with life tables and duration of life is treated in a too technically actuarial and mathematical manner for the use of students; this is to be regretted, for a knowledge, at any rate, of the principles which govern the life-table method is almost essential to the construction of sound and trustworthy mortality statistics, and to the power of drawing true inferences therefrom. This information, however, for the use of ordinary students, should not have been so technically treated.

Dr. Newsholme, in a brief introductory description of the contents of the census reports, says, with regard to ages—"The accuracy of the information under this head has been impugned, but it is noteworthy that the mean age of females, as returned in England, exceeds the mean age of males by ten months, *so that the tendency of women to understate their ages evidently only operates in comparatively small numbers.*" The italics are ours, and we cannot help wondering who is responsible for this original inference, as it is difficult to see any possible connection between the probable occasional understatement of age by women, and the excess of the mean age of living females, which is obviously due to their greater longevity. Then, again, the following description of the system of registration is both bald and inaccurate with reference to a subject of the first importance to a student of vital statistics:—"The registration of births and of deaths is performed either at the offices of local registrars or the houses of the people. Copies of the certificates are forwarded to the General Register Office, Somerset House, where they are collated and abstracted; and from these abstracts the weekly, quarterly, and annual reports of the Registrar-General are prepared." An accurate knowledge of the system of registration, of the precise information contained in the Death Register, and of the relations between the public, certifying medical practitioners, registrars, and medical officers of health, we hold to be essential to all engaged, or proposing to engage themselves, in the construction of mortality statistics, but Dr. Newsholme's burlesque description of the system of registration in the above-quoted paragraph is as misleading in its deficiencies as it is inaccurate in its statements. We may note, moreover, that the present law concerning the burial of still-born children is described later on in the book in a manner which is not precisely accurate, and is, therefore, misleading. We may refer to another point where the student should have received the assistance of further information concerning the details of our registration system. In dealing with the subject of the due correction of mortality statistics for deaths in institutions, it is said that "in provincial towns, however, there is reason to believe that such corrections are commonly avoided." The student and junior medical officer of health is not, however, told how he is to obtain the necessary information concerning these institution deaths, neither is he even told that the previous residence of persons dying in institutions is now inserted in the death register, in order to afford the means for carrying out this necessary correction of mortality statistics.

We have said that on the essential, and what may be called the controversial, portions of the subject Dr. Newsholme is in the main sound and trustworthy, and his chapter on statistical fallacies is undoubtedly useful, although here the matter is put together in a manner showing too plainly the seams in the patchwork incidental to the system of depending too much upon actual notes and extracts, instead of using them as material to write upon. No student who uses Dr. Newsholme's guide will, however, have any excuse for neglecting the due consideration of age and sex constitution of a population in the construction of vital statistics; or for basing conclusions as to health condition in different populations, or in different classes, upon the mean age at death, which must

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be more or less dependent upon the mean age of the living; or for reasserting the old Letheby fallacy that "the birth-rate is the controlling element of the death-rate, and a high birth-rate causes a high death-rate"; and so with many other sources of fallacy concerning which Dr. Newsholme effectually puts his readers on their guard.

We have alluded to the risk incurred in undertaking to write a guide to such a subject as vital statistics without thorough knowledge, and to the unmistakable signs in this book of the author's want of a firm and thorough grasp of his subject. While, therefore, space forbids us to notice more than one or two instances of the shortcomings arising from these disabilities, which we marked during reading, it is due both to Dr. Newsholme, and to his readers, that we should refer to one or two instances to justify the opinion we have expressed. Take for instance the controversial subject of the inter-relation of birth-rates and death-rates. Dr. Newsholme has read and made numerous extracts from what has been written on the subject, and is evidently convinced that Dr. Farr and not Dr. Letheby had the best of the argument. He points out that a high birth-rate does not cause a high death-rate, and that neither does a low birth-rate cause a low death-rate; but he goes beyond his text and the truth when he adds that "the exact converse of this holds good, the death-rate controlling the birth-rate." The fact, however, is that both birth-rate and death-rate are controlled by age-distribution, and neither can be said to be dependent on the other. Dr. Newsholme's interpretation of the true relation between birth-rate and death-rate is vague and confused, and in his interpretation he mixes up the influence of the birth-rate on the age-constitution of the population with the influence of the age-constitution of the population on the birth-rate; he omits, moreover, to point out that a high birth-rate necessarily implies that the population contains an exceptional proportion of young adults living at low mortality ages, and consequently a small proportion of elderly persons living at ages when the death-rate is high. In conclusion it is stated, "the rule therefore is that the lower the average age of a population (mean age of the living) the lower ought its death-rate to be." This may generally be the case, but it would be very easy to show that there can be no invariable rule to this effect.

We must content ourselves with one more example of the danger of wholesale collection of statistical extracts, without the help of sound knowledge to assist in discriminating the wheat from the chaff. In discussing the effect of migration upon mortality statistics Dr. Newsholme remarks that, "In the case of districts inhabited by artisans and labourers there is always an extraneous population pressing in to fill the vacuum caused by removal or death, so that, as pointed out in regard to Liverpool by Dr. Trench (misprinted French) in 1865, the same house may in one year represent the accidents, deaths, and diseases of twenty-four persons, instead of the six persons which the census gives for each house." Now, if this arrant nonsense had found place in the chapter on fallacies, and its error had been duly explained as a warning to students, no fault could have been found at its being pressed into service by Dr. Newsholme, but it is a little too bad to find it seriously quoted in a guide to vital statistics, and commented on in the following words: "Of course the chances of death are increased in proportion to the number of times a house or a bed is occupied during the year"; and further on, speaking of the ingress of visitors to such a town as Brighton (for which the author is medical officer of health), he uses the following expression: "the chances of death increasing with the frequency (*sic*) that the population of the town undergoes change." It is difficult to speak too severely of such blundering. Either this is an example of careless and thoughtless writing, or Dr. Newsholme cannot entirely be trusted to guide others to a sound knowledge of the principles of vital statistics. He deliberately compares a house to a hospital bed, and gravely argues that a house that is inhabited by twelve sets of tenants in a year should have twelve times as many deaths as a house occupied by one set of tenants throughout the year; or, put in another way, that if one set of tenants should live in twelve different houses during the same year, the deaths in the family should be twelve times as many as if they had resided in one house throughout the year. How enormously high the death-rate of such a seaside resort as Brighton ought to be, if Dr. Newsholme is right in asserting that the chances of death increase with the frequency of change in the population of the town; for the constant influx and efflux of the thousands of visitors who stay only a week or even a day in Brighton is matter of common knowledge. It would appear from this, as well as from his description of a death-rate on page 76 of his book, that Dr. Newsholme has no clear and definite idea that an annual death-rate per 1,000 implies the number of deaths that occur among 1,000 persons each living through a complete year of life. Otherwise he could not have fallen into the error of stating that twelve sets of tenants, inhabiting one house for a month at a time, would give twelve times as many deaths as one set of tenants inhabiting the house for twelve consecutive months.

Some handy guide to vital statistics was so much wanted that this book will undoubtedly be useful, and we cannot therefore regret that Dr. Newsholme should have had the courage, with his imperfect knowledge of the subject, to prepare and publish his manual, trusting probably to have the opportunity to revise and rewrite portions of it whenever a second edition should become necessary. Students who have not time and inclination for studying the subject first hand from the writings of Dr. Farr, will owe a debt of gratitude to Dr. Newsholme for his condensed version, which, notwithstanding blemishes, some of which we have referred to, will afford them assistance in a more convenient form than has hitherto been available.

The Medical Hand-book of Life Assurance. By JAS. E. POLLOCK, M.D., F.R.C.P., and JAS. CHISHOLM, Fellow of the Institute of Actuaries, pp. 253. Messrs. Cassell & Co.

THIS work has the rare merit of brevity, and is both comprehensive and detailed. The problems that come before the medical examiner in life assurance are set forth with admirable clearness and precision; each paragraph contains some contribution of value; it bears a number, and throughout the 400 paragraphs there is scarcely one that is redundant or fails to convey some useful information or counsel. Most of them are open to argument, and might form a text for long and profitable discussion, but the aim has manifestly been to arrive at a clearly defined conclusion, and to express it as concisely as possible.

The first few pages deal with the modes of examination of candidates, from which it appears that whilst the most accurate and advanced methods of examination, as applied to the sick, are required, something more is needed by the assurance examiner than is required of the ordinary hospital physician.

The sentences dealing with prognosis from physiognomy, the modes of detecting fraud, and the examination of the suspected drinker are full of wise insight.

It is curious to notice how the "free liver," who generally bears on his nose, his cheeks, his tongue, or his soft palate the evidence of frequent debaucheries, will prepare himself by a course of abstinence, of Turkish baths, of aperients and bitters, to pass under the scrutinising eye of the "insurance doctor," who, even if he detects signs indicating habits of excess, is apt to be put off his guard by the volunteered confession of a "quite exceptional carouse" on the previous night.

The medical examiner needs a quiet and sympathetic manner to put his patient at his ease, and thus minimise the nervous palpitation which otherwise interferes with satisfactory examination of the heart; he needs firmness in securing precise answers to questions, and tact in getting at the facts, especially as regards habits of daily life.

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We commend Dr. Pollock's advice that, having thoughtfully and deliberately arrived at a decision, and written it down, it is wise never to depart from it unless fresh evidence is adduced, and even then it is rarely desirable to make any change.

The physician is expected to be "faithful and farseeing." Forecasts imply full medical knowledge and high intellectual ability, qualities limited to very few, power of observation, memory, experience, capacity of estimating differences and generalising with accuracy; these can only come to the cultured, and their possession is a gift to be highly valued and not rashly set aside.

So great is the importance of this work that we are confident that its distribution among the medical examiners of the various insurance offices would materially aid them in giving reliable information and advice. The directors would thus secure an increased freedom from risk in country cases. Proposers examined at a distance might prove nearly as favourable as those examined by their own medical officer.

Whether thus freely distributed or not, we are confident that this will long be regarded as the text-book for insurance practice.

The United States of America are in advance of the Mother Country in that they have established a Chair of "Life Assurance" in some of their medical schools. The medical curriculum is with us already unduly extensive, but the work before us is a sufficient indication that a course of lectures on the subject might rightly form a part of a systematic and comprehensive medical education.

We turn with interest to the chapters bearing on "heredity," to those on gout, rheumatism, heart disease, phthisis, &c.; to the relation of albumenuria and glyconeria to life expectancy. We are inclined to think that the author errs rather on the side of caution, and gives the office the benefit of the doubt.

It is, however, bold to criticise one whose experience is so large, one who has so carefully balanced conflicting opinions, but we believe that the importance of hereditary influence is for the most part over-estimated, while gouty conditions are under-estimated.

The existence of pregnancy as affecting insurance is fairly dealt with, the statistics of mortality in first confinements (1 in 74) more than justifying the customary 1 per cent. extra rating, whilst the risk (1 in 123) in subsequent confinements calls for an extra rating, although many of the offices seem inclined to let it pass. The tendency to simplification and the removal of all restraints, the natural outcome of competition and experience, has led to the equalization of risks for women and for men, although many of the Scotch offices are so lacking in gallantry as to surcharge all ladies whether married or single.

We look in vain to find adequate information about "issue risks," which are so largely incurred in some offices. Again, there is little to guide the medical examiner to a health assurance society, although it is clear that the prospect of sudden death, so specially dangerous to a life office, would not interfere with the acceptance of an assurer in a health office where the payments are made only in the case of illness and not at death.

The actuarial calculations and tables supplied by Mr. Chisholm add much to the value of the work, but in a review like the present it is necessary to limit our criticism to the more strictly medical side of the inquiry.

The "typical cases" at the end are most instructive. The charges in some cases seem inadequate, and in still more are excessive. It could not be otherwise, for the aspect of the proposer with his many characteristics, incapable of tabular expression, must always guide the decision. Speaking generally, these extra charges are higher than is customary, but not higher than is justifiable. When the practice of insuring invalid lives was first introduced it was deemed right to surcharge them in excess of the real risk in order that the healthy, insured at ordinary rates, who formed the bulk of the insured, should have no ground for complaint.

Many offices are now making a point of invalid lives, and with a view to attract them make the extra ratings unduly low. Thanks to the *Medical Hand-book*, we may now hope that both of these dangers will be avoided.

Summer Diarrhœa in Cardiff. By Dr. EDWARD WALFORD.*

MUCH has been written as to the etiology of summer diarrhœa, especially as to the fatal epidemics among infants which usually occur in the months of August and September, and the investigations of Dr. Paine and Dr. Walford in Cardiff form valuable contributions to this literature. Sir John Simon, F.R.S., in 1866, alluding to the reduction in the death-rate in various towns caused by works of sanitary improvement, writes as follows:—"Foremost I must name Cardiff. Of the monstrous mortality which that town suffered before its sanitary works were constructed, nearly a third part has now ceased. The death-rate by cholera in 1848–49 was 208, in 1854 it was 66, in 1866 it was 15½. The death-rate by typhoid fever has fallen from 17½ to 10½, and that by diarrhœa from 17½ to 4½ per 10,000. The results obtained in Cardiff are the more creditable to those who have wrought them, as the difficulties to be conquered were specially great." During the last ten years, out of a total of 978 deaths from diarrhœa in Cardiff, 729, or about 74 per cent., occurred among children under one year of age. The number of deaths from diarrhœa in towns which are naturally dry is much less than in towns situated on a wet soil. Some years ago Dr. Buchanan, medical officer to the Local Government Board, very carefully investigated this subject, and demonstrated the fact that the diarrhœal death-rate is higher in those districts situated on a retentive geological formation, and that where much drying of the sub-soil has taken place in consequence of the drainage of the district the diarrhœal death-rate has been lowered. Recent observations point very strongly to the conclusion that the essential cause of diarrhœa is a micro-organism. It appears that as regards Leicester, in those districts of the town where diarrhœa is most prevalent the air is most contaminated with microbes or their germs and spores, and that these same microbes, when artificially cultivated, possess the power of inducing diarrhœa in the human subject, that those districts which contain excess of micro-organisms are those especially in which pollution of the soil and air has been going on for many years. There is evidence, however, that micro-organisms are not the only cause of infantile diarrhœa. Dr. Walford's inquiries concerning the deaths of infants from diarrhœa show that out of 337 fatal cases only four had been fed entirely from the breast, 316 on cow's milk, and the rest on other kinds of food. Artificial feeding of infants appears to be rare amongst a purely Irish population, and among them there is a comparative immunity from infantile diarrhœa. Dr. Walford's conclusions as to the chief factors in the production of infantile diarrhœa are:—

1. A continued mean temperature of the air above 60° F., and of the earth at a depth of 4ft. above 56° F.

2. An undrained waterlogged soil, polluted with organic filth.

3. A peculiar sequence of meteorological conditions, *i.e.* a wet month followed by a hot, dry one.

4. The development, depending on or favoured by the above conditions, of micro-organisms, which are the essential causes of disease and which find a suitable nutrient material in the various foods given to infants, more especially in cows' milk.

Cremation and Urn-Burial, or the Cemeteries of the Future. By W. ROBINSON.

THERE are probably few scientific men at the present time who do not acknowledge the great sanitary advantages of cremation over earth burial. The subject is not an attractive one, and yet the education of the public in

* Read before the Cardiff Medical Society, May 1889.

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this matter is so incomplete, that popular lectures and essays setting forth the dangers and abuses of earth burial, as illustrated by so many of the graveyards and cemeteries scattered throughout the country, are probably a necessity. All the same, moderation in this as in other controversies, is essential, and we doubt whether the story of paupers' graves in one of the large metropolitan cemeteries being dug up periodically every twelve years and the coffins and human remains being burnt is one likely to advance the credibility of the cremationist advocacy.

What stands in the way of cremation is, firstly, the conservative sentiment of the people in the matter of disposal of their dead, and, secondly, the difficulties in the way of carrying out a cremation. We do not believe that the religious sentiment holds any sway in the minds of educated and sensible people, it being so obvious that cremation merely effects in an hour what it takes 10 to 50 years of burial in the earth to accomplish, the ultimate result in both cases being the same. We are strongly of opinion that the only satisfactory method of overcoming the prejudice still existing, and of acquainting the public generally with the dangers to health of the system of earth burial, which are even now becoming something more than a name in the populous districts surrounding the metropolitan cemeteries, is the appointment of a Royal Commission of Inquiry, and we strongly urge upon Sir Lyon Playfair, and the other advocates of cremation in the House of Commons, the desirability of moving for such a commission in the next session of Parliament. The present system is bad for the present generation, but it will be far worse for succeeding ones; and it behoves us all to make an effort to prevent our own decaying bodies from being a legacy of disease and death to our heirs and successors.

NOTES ON BOOKS.

The Journal of Comparative Pathology and Therapeutics. Edited by J. M'FADYEAN, M.B., B.Sc., F.R.S.E., M.R.C.V.S., Lecturer on Anatomy at the Royal Veterinary College. (Edinburgh: W. and A. K. Johnston).

THIS is a useful and interesting quarterly, that is now entered on its second year. Among all the crowd of professional journals that claim attention, there is room for this. It has begun well, and has a strong editor and no lack of accomplished contributors. In the number for the current month, which lies before us, are articles on subjects of especial interest to medical officers of health, *e.g.* on the tuberculous meat cases at Glasgow, and on meat inspection. We would also draw attention to an article on tubercular mastitis in the cow, and a carefully prepared report of a committee appointed by the Highland and Agricultural Society of Scotland, on Epizootic Abortion. The publication is beautifully illustrated with cuts and coloured lithographs, and neatly printed on toned paper, while the subscription price is only ten shillings a year. We wish Mr. M'Fadyean the success he certainly deserves.

The Gas and Water Companies' Directory, pp. 256, *Gas Works Statistics*, pp. 104, and *Waterworks Statistics* pp. 40. Edited by CHARLES W. HASTINGS. London: Hazell, Watson, & Viney, Limited. 1889.

MR. HASTINGS sends us his annual statistics, which bear evidence of a very strict revision; he states that almost all the returns are made up to the 31st December last, and the changes in management have been carefully noted up to the moment of going to press.

The Directory is no doubt a most useful one to those who have occasion to consult its carefully edited columns. It is in the gasworks statistics that we search in vain for any indications that gas, amidst the battle of lights, has in any degree lost ground lately. There is, indeed, plenty of evidence that the development of this industry still continues with unabated strength. In a locality like Sheffield, for instance, where a previous return established a consumption of 1,389,000,000 cubic feet, the latest return in these statistics furnishes 1,446,000,000 cubic feet, amounting to an annual increase of nearly 4 per cent. Turning to Leeds, Mr. Hastings' figures do not assist us much, but it is within our own knowledge that the increase from 1886 to 1887 reached 61,000,000, or 3·3 per cent. At Nottingham an increase from 1,281,000,000 to 1,313,000,000 cubic feet is established, or nearly 2½ per cent. At Birmingham there is an increase from 3,343,000,000 to 3,482,000,000 cubic feet, exactly 4 per cent. At Plymouth the increase is over 5 per cent., at Derby, under 3 per cent. We have looked carefully for indications of any appreciable decrease and find none.

The flourishing returns from the corporation undertakings is, indeed, remarkable. As a more particular instance of this, the case of Leicester may be mentioned, where, upon the acquisition of the works by the Council, the price was 2s. 10d. Reductions have from time to time been made, until, as shown in the returns, the price is now 2s. 4d. in the borough. During these ten years the nett profits made amounted to £210,281. The local authorities paid £31,080 to a sinking fund, £20,000 to reserve and renewal funds, and the balance, £159,201, has been, in the interval, contributed to the relief of the general district rate.

Results of this kind, bringing into strong relief the advantages of transfers, are not calculated to strengthen monopolies in gas or anything else.

We are glad to notice in the Directory several new records of transfers, Edinburgh, Cockermouth, Wilton, &c., as evidence of the continued appreciation in which gas undertakings are wisely held by our communities; amongst these the instances of Marple and Mountain Ash are omitted.

In the water section the particulars are very brief, and supply little ground for comment, and some form like the "Urban Water Supply" 1878, moved for by the Marquis of Stafford, might be adopted if the editor intends to do justice to one of the most important aspects of the sanitary question.

Water returns of this description generally show that the meter water for trade purposes is charged too low to manufacturers, while the loss this incurs is recouped by maintaining the water rates chargeable against the ratepayers at a uniformly high rate. These statistics, as far as we have been able to examine them, appear to confirm this.

On Tuberculosis. Being a Paper read by JAMES NIVEN, Medical Officer of Health for Oldham, on March 16, to the Association of Public Sanitary Inspectors (Manchester Centre).

DR. NIVEN, in plain words, easily understood by those he addresses, gives a very careful summary of what is at present known regarding this most important disease of man and the lower animals. He briefly tells of the discovery of Koch, the investigations of Villemin, Cohnheim, Ransome, Cornet, and others, and impresses upon his hearers the undoubted fact "that consumption is the result of infection, and that where there is no infection there is no consumption." From this he goes on to indicate the procedure which may be adopted to diminish the prevalence of consumption, and to discuss the lines of investigation open to a sanitary inspector. To ascertain whether inspectors could not render efficient service in this direction, Dr. Niven supplied his inspectors with forms of inquiry and sent them with these to houses in which were recent cases of consumption selected by him. A tabular statement of the facts ascertained is inserted in Dr. Niven's pamphlet. There is much that is suggestive and original in this little book, and we heartily recommend it, not only to inspectors, but to medical officers of health.

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Proceedings of the Association of Public Sanitary Inspectors (North-Western district). Vol. ii. (1888–89). By J. H. TODHUNTER, Park Street, Liscard.

WE are much pleased with these proceedings, which a vigorous life in a young and useful association, and one to which we wish every success. Dr. William Carter at the first annual dinner made an admirable speech. Amongst many useful points, he urged that it is not only by the removal of epidemic and infectious disease that a locality benefits by sanitary inspection. There may be a complete absence of the disease germ upon which typhoid or small-pox depends. There may be no scarlatina in the district, and the so-called zymotic death-rate may be low, and yet the health of the district may be most unsatisfactory. It is too much the custom to study what is called the zymotic death-rate, and to judge from that factor as to the general health of a given district, and it is often assumed that because that form of disease is not so fatal as in other places, therefore, the sanitary state of that district is satisfactory. This is a serious mistake. I want the public to become aware of this and to recognise the fact that sanitary work can go much further in the prevention of disease and death than this. Why should men, women, and children die of disease at all? There is no provision for death in early life except by accident, ignorance of the laws of health, and neglect of duty towards our neighbour on the part of somebody? And again, the half of the deaths which take place might have been prevented if the people would obey the laws of health, keep their houses and their persons clean, dispose of their excreta in a proper way, and be temperate in their habits of living, and at the same time do their duty to their neighbour by avoiding the sophistication of articles of diet or indulging in the mischief of adulteration for the sake of the riches which follow upon its pursuit.

In the body of the proceedings are excellent papers: on "Other Plans than Ours," by H. D. Mathias, being an account of sanitary work in different countries in various ages; on "The Disposal of House Refuse," by Mr. Arthur Salmon; on "Sanitary Work in Rural Districts," by W. Bland; on "The Public Health Act, 1875, and its Amendments," by Wm. W. Marks; and on "Sanitary Work, is it beneficial to the Ratepayer?" by A. Stansfield. As a foil to this a foolish paper on "The Essentials of House Sanitation," read by John Davidson, M.B. Edin., is given. Mr. Davidson having shown that by the application of heat he could drive the air confined in a glass tube through the seal of a water trap formed in a bend of the pipe, arrives at the conclusion that air (under ordinary conditions) travels freely through water traps, and therefore that it is absolutely better not to place water traps on the waste pipes from sinks and baths. In his own words, "better have the external atmosphere entering the house through other channels than a stink trap." All this is very foolish and pernicious. Mr. Davidson states that "the attainment of truth is at all times most difficult," with which we freely agree; but he goes on to say, "if I have exhibited an iconoclastic spirit and destroyed the poor images of deception it will not be matter of much regret." We agree also with this, but there is much virtue in your "if."

Finally, the doctor promises to disclose further discoveries at a future date, we shall await with calmness the promised revelations.

Report on the Best System for the Maintenance of Main Roads in the County of Hertford. By URBAN A. SMITH, A.M.I.C.E., County Surveyor of Highways.

THE Local Government Act of last year, as is now pretty well known, has given to the County Councils powers and duties with respect to the maintenance of their main roads which no county authority had previously possessed. Individual members of the Councils cannot, as a rule, be expected to have any special knowledge of road maintenance; and, at present, there is a good deal of difference of opinion as to the mode in which this duty may best be performed. The matter was discussed in our issue of last month, and we there pointed out generally what the powers of the Councils are. The report now before us deals practically with the main roads in Hertfordshire, and states very clearly Mr. Smith's opinion that, at any rate in the rural parts of the county, the maintenance of the roads can be undertaken more efficiently and economically by the County Council than by the existing local highway authorities. Hitherto, of course, these different authorities have each repaired such bits of main road as are situated within their respective districts, and have been repaid out of the county chest their proportion of the cost of these repairs. There are no less than 130 pieces of main road separately repaired under this system in Hertfordshire alone. The work of maintaining these separate pieces is necessarily performed differently by the different surveyors and local authorities, and has apparently not always been done well. But it has been very expensive, costing on an average £65 per mile in the rural districts, as against £26 10s. for main roads in South Wales, and about £27 for turnpike roads in England previously to their being transferred to the counties. Unless the Hertfordshire County Council distrust their surveyor's judgment, his report should induce them to undertake the maintenance of their own main roads, and to put an end to the wasteful system of local management by unpaid surveyors, who do not understand much about roads. The report, however, is valuable outside the boundaries of Hertfordshire, and in districts where the old system of local maintenance is continued. The bad and yet expensive roads which exist in many parts of England are due chiefly to the ignorance of local surveyors. Mr. Smith has drawn up an excellent memorandum for the guidance of such men, which is appended to his report. If the post of surveyor of highways was usually filled by a qualified engineer, many of the maxims here given would be superfluous. But, unfortunately, many worthy men who have the care of roads appear to be ignorant of such elementary principles as that mud, if left on a road, tends to wear it out, that if stones are put on too large it tends to loss of material and spoils the road, or that metalling should be laid on when the surface of the road is moist, otherwise much of the material is ground to powder, blown away as dust, and lost. We commend the report and its appendix to county councillors generally, and wish that a copy of it were in the hands, and brains, of all country surveyors of highways.

House Drainage. By WILLIAM MORLEY EGGLESTONE, Stanhope, *vid* Darlington.

IN this little pamphlet the author takes us through the elements of sanitation in a concise and sensible manner. The work is more especially addressed to the householder, whom Mr. Eggleston wishes to rouse to a proper sense of the importance of his subject. We can recommend the pamphlet as containing a readable summary of sanitary practice, as well as descriptions of several ingenious novelties introduced by its author.

Does the Use of Alcohol Shorten Life? By JAMES WHITE. Manchester: United Kingdom Alliance.

THE extraordinary misuse of some of the figures in the well-known report of the British Medical Association on the alcoholic deaths in the practice of a number of the members, has elicited quite a host of replies. This is one of the latest and most valuable. Mr. White plainly sets forth the fallacy of the contention that because one grouping of the figures in the returns appeared to give a longer mean duration of life to the intemperate than to the abstaining patients of 178 members of the Association dying at over twenty-five years of age, therefore the drunkards had been longer lived than the teetotalers. Mr. White clearly shows that the figures in question prove nothing of the kind, as the comparatively small proportion of teetotal lives reported on, and the average age of living abstainers cannot be compared with the prepon-

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derance and length of drinking lives. The simple explanation is that abstainers are not, as a rule, old enough (the temperance movement having been of only modern growth) to show anything like as great an average of long life as drinkers. Therefore there can be no comparison. The factors are not equal. The author carries the war into the opposing camp, and shows from a comparison, where the conditions are the same, in various insurance companies, that the lives of the abstaining assured have been considerably longer than the lives of the non-abstaining assured. It is brought out that the British Medical Association Committee really reported that habitual indulgence in alcoholic liquors, beyond the most moderate amount, actually has a tendency to shorten life.

CORRESPONDENCE.

Audi alteram partem.

[*All communications must bear the signature of the writers, though not necessarily for publication.*]

THE RELATION OF THE INSPECTOR TO THE MEDICAL OFFICER OF HEALTH.

I WAS glad to find that a "Rural Inspector" had, in your number for July, called attention to the model answers given to the questions asked in the examination of inspectors by the Sanitary Institute. I had myself seen some previous ones with which I could not agree, but was much less able to give my assent to the statement that it is one of the prescribed duties of an inspector "to act under the medical officer of health." It is this subordination of the former to the latter against which I ask you to allow me to raise my protest.

A "Rural Inspector" has clearly shown that there are many circumstances in which distinct action must be taken by his fellow inspectors, notwithstanding any instructions to the contrary, and I need not go over the same ground again. The matter, in my opinion, to a great extent, rests upon what is the status, and the individual character of the medical officer himself. At the meeting of the British Medical Association at Leeds in August last, Dr. Brown (Bacup) gave an admirable sketch of what such an officer should be, and also what should be the conditions of his appointment. As to the former, it is perhaps a little Utopian, and a trifle beyond what erring human nature can hope to attain to; but at all events, under any man approaching such a high standard, with his heart in his work, and unbiassed by any personal considerations, I for one should not object to work. But it will be observed that all these model sketches require for their complete realisation the absolute prohibition against private practice. It would be interesting to know in what proportion of the appointments this proviso is included. I fancy it would be found to be a very small one. This is the point upon which mainly, but not entirely, rests the question of what should be the relations between the two officers. A medical officer who has a practice to make to eke out the small salary usually given, or to retain one already made, is placed in a very unfair position when he is asked to carry out the provisions of the Public Health Act impartially and conscientiously, and so long as human nature is what it is it is not surprising to find these duties very often neglected. Why, then, by subordinating the one man to the other, make two useless officers instead of one? But there are many stronger reasons against it than this. It may be said that my experience is exceptional. Perhaps so to a certain extent—and I sincerely hope it is—but here is a sketch of a real medical officer of health in contrast to Dr. Brown's ideal. This gentleman, after nine or ten years' tenure of office, has never yet set his foot within several of the parishes of his district, and in the case of some others has still to inquire where they are, and what is the road to them. His journeys upon the work of the authority certainly average less than twenty in the year, and as a rule are confined to the nearest parishes, and yet he is considered to be in a position to give an annual report as to the sanitary condition of the union. Within the limits of his practice he has "no eyes to see, or ears to hear," and he is swayed both by personal and political considerations. Would the writer of the model answers alluded to above, hold that an inspector would be placed in subordination to such a man as this? Would he even suggest that he should work with him on such lines as I have named. I have said that my experience may be somewhat exceptional, but, anyhow, the circumstances in two adjoining unions, from slightly varied causes, are not much better.

Generally, I contend that the two officers are entirely distinct in their character, and that much better results will be attained by each "sticking to his own last"; the one keeping to the medical aspect of things, the other attending to the executive work required in the removal of nuisances, the prevention of diseases, and the general sanitary condition of the district. I say further that every inspector should be required to make an annual report as to the work, and the improvements, if any, made in each parish under his charge.

In conclusion, let the different authorities lay aside the extreme apathy with regard to sanitary matters which now exists, more particularly in rural areas; let them appoint competent men for each office, giving them security of tenure, and see that they carry out properly, without fear or favour, the functions assigned to them by the Public Health Act. But until there is supervision exercised over the performance of these duties in the same manner as it is now carried out in matters pertaining to the administration of the Poor Law, I am afraid that much improvement cannot be looked for except in the dim future.

"PUBLIC HEALTH."

TENURE OF OFFICE OF SANITARY INSPECTORS.

SANITARY inspectors generally cannot too much thank you for drawing attention, in your August issue, to the flagrant exhibition of red tapism indulged in by the Local Government Board, in regard to the case of the appointment of the sanitary inspector for the Shipton and Silsden districts; it is a graphic illustration of how work is performed in the "circumlocution office," to the detriment of every interest concerned. Hitherto it has been the practice amongst sanitary inspectors to decry against local authorities for not making their appointments more secure, and more free from personal influence, but here we have a case of a local authority willing to appoint their inspector for three years, when that dear old woman, the Local Government Board, with its usual grandmotherly propensities, steps in and says, "We know more about this business than you, and beg to inform you that 'practice' will not allow of your appointing an inspector for more than one year." What a pity it is that these officials, comprised in the ambiguous term, "The Local Government Board," who thus play ducks and drakes with the positions of sanitary officials, could not be made to undergo the same humiliation, and have their appointments sanctioned in like terms, they would then understand the matter more forcibly than they do. This is not the first case in which they have interfered with their hampering humbug called "practice," knowing nothing, or, if they do, caring nothing for the fact that it is impossible for a sanitary inspector to honestly and fearlessly do his duty without security of tenure.

I would suggest, in relation to this matter, that the different associations of sanitary inspectors in the country should combine with a view of approaching the President of the Local Government Board with the object of getting this baneful "practice" abolished, or if the miserable pettifogging jealousies of the associations will not allow them to do this, could not Mr. White Wallis,

with his constant readiness to assist, arrange a meeting during the coming Congress of the Sanitary Institute, when other questions relating to the duties and positions of sanitary inspectors, and their relations to public health, might be discussed on lines similar to the manner in which the medical officers of health meet during the Congress. Thanking you in anticipation,

I am, yours, &c.,

September 2, 1889. SANITARY INSPECTOR.

WHO IS THE REAL OFFICER OF HEALTH?

I NOTICED in a widely circulated daily paper, that at the recent meeting of medical officers of health in connection with the Sanitary Institute's Congress at Worcester, much was said about the authority of the medical officer over the sanitary inspector or inspector of nuisances. One eminent M.D. and officer of health candidly saying "he did not believe in inspectors of nuisances," and from the generally disparaging remarks the thinking public are naturally led to ask the question propounded above.

The inspector has hitherto been rightly looked upon as the practical exponent of sanitation, and authority of the local sanitary authority. The whole training of a medical man is directly opposed to sanitation and freedom from sickness, his study is to *cure* disease not to prevent it by any means, and the public will surely look this matter in the face now, and ask whether a highly-paid, entirely theoretical man is at all necessary in the administration of the Public Health Acts. We are evidently suffering from an over-production of doctors, and they think this public health business a taking and paying subject.

With perhaps the single exception of dealing with infectious cases in hospitals there is no necessity whatever for a local authority to appoint a medical officer of health as he has hitherto been appointed. His position should be analagous to that of a consulting engineer, to be called in when he is wanted.

What is the experience of towns where the medical officer is engaged in private practice? Why from what I can learn, and as I once saw it stated by an alderman of many years public experience, "the post is a sinecure." What then is the case where he devotes his whole time to the work? Why he requires a whole staff of additional inspectors and clerks to pile up his vital statistics and particulars innumerable, which cost as much again as his own salary, and are, perhaps, read by one member of the council, the rest voting the whole thing a humbug, but blindly fancying they are obliged to continue it.

Members of town councils and sanitary authorities! Does your medical officer of health do anything but office work or work that could be equally well done by your inspector, and at less cost? How many dirty cellars, lodging-houses, and fever dens does he inspect? I hear the answer, none! Then who does the work? Why your poor slaving inspectors who have to run all the risk and danger, and prepare everything to your doctor's hands, so that he simply acts as errand boy between yourselves and your offices; and while the man who has done the real work is kept in the back ground and paid perhaps a paltry 30s. per week, you pay your doctor from £5 to £20 per week. Is this just, necessary, or in any degree right? I ask our authorities and legislators to ponder this question—Who is the real officer of health?

Yours faithfully,

October, 1889. BRITON.

SANITARY JOTTINGS.

MILK ADULTERATION.—At a recent meeting of the Wakefield City Council the Town Clerk reported that certain cases taken before the magistrates for adulteration of milk had been dismissed on the ground that the adulteration did not exceed 9 per cent. He was directed to write to the Local Government Board on the subject.

THE Medical Officer for St. Pancras denies that there is any "outbreak" of scarlet fever in Camden Town, on which alleged epidemic the press have been saying so much.

By the Town Police Clauses Act (1889), every Urban Sanitary Authority is empowered to make bye-laws as to omnibuses, char-à-bancs, wagonettes, brakes, stage-coaches, &c.

MARGATE DRAINAGE.—The Margate Corporation have signed a contract for £58,291 with Messrs. Cooke & Son, of London, for the completion of the drainage of the borough

CLOWN AND BARLBOROUGH SEWERAGE.—The Worksop Rural Sanitary Authority have instructed Mr. W. H. Radford, C.E., of Nottingham, to prepare schemes for the sewerage and sewage disposal of Clown and Barlborough.

THE DUSTMAN'S "TIP."—The Lambeth Vestry has discovered that a reason why many dust-bins are overcrowded, to the detriment of health, is that poor people are often unable or unwilling to pay the coppers which the men extort when called in to make a clearance. To remedy this the vestry resolved to adopt the "pail system."

THE Aston Manor (Birmingham) School Board have decided to erect swimming baths for the benefit of the scholars attending their schools. Some opposition was offered on the ground that it was outside the province of the School Board to provide swimming-baths for the children, but the chairman (the Rev. W. Elliott) explained that the Education Department would not oppose the expenditure necessary for the new building.

SEVERAL cases of poisoning are reported to have occurred in a country parish near Aberdeen. It appears that the recent heavy rains burst the drain-pipes, and the water in the wells became contaminated. Several workmen employed on two farms have been attacked with typhoid fever and one death has occurred.

NOTIFICATION OF INFECTIOUS DISEASES IN SCHOOLS.—The school teachers in France are, by a recent regulation, compelled to notify to the sub-prefect of the department the occurrence of any case of epidemic disease which may occur among the children under their charge. They must also forward to the same official a quarterly return of cases; the statistics thus collected being forwarded to the central authorities of the Public Help and Sanitary Departments in due course.

ERDINGTON SEWERAGE.—A Local Government Board inquiry was held on October 4, at Gravelly Hill, near Birmingham, and presided over by Mr. Arnold Taylor, engineering inspector. The Aston Rural Sanitary Authority applied for powers to borrow £5,000 for the sewerage of a part of the Erdington and Witton special drainage district. Mr. W. H. Radford, sanitary engineer, Nottingham, is the engineer for the scheme, and he explained the plans.

PUBLIC SLAUGHTER-HOUSES FOR THE METROPOLIS.—On the motion of Dr. Longstaff it was agreed at the meeting of the London County Council, held on October 1, "That it be an instruction to the Sanitary and Special Purposes Committee to report to the Council as to the desirability of establishing public slaughter-houses throughout London, and as to the facilities which such a system would afford for the better inspection of the meat supply."

BRIGHTON AND ITS SANITARY INSPECTORS.—At a recent meeting of the Brighton Town Council, Dr. Newsholme stated that at his suggestion the assistant sanitary inspectors had begun to attend evening classes in building construction in connection with the Science and Art Department. The instruction given in connection with those classes was, he stated, of great importance in sanitary work. The council, at Dr. Newsholme's suggestion, agreed to defray the fees of instruction for the present course, viz. 13s. for each student.

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NOTICES OF MEETINGS.

THE METROPOLITAN PUBLIC GARDENS ASSOCIATION.

At a meeting of members held at 83, Lancaster Gate, on October 2, grants of £21 and £10 10s. were announced from the Skinners' and Merchant Taylors' Companys, and the award of a gold medal from the Paris Exhibition for the maps and plans shown by the Association in the British Economic section. It was agreed to plant trees and place seats on an embankment by the river at Putney, to offer to place seats on Highgate Hill, and to embellish a space at Piccadilly Circus with shrubs in boxes; to provide a plan for the laying-out of the Pottery Lane Recreation Ground Notting Hill; to plant Romford Road, East Ham, with trees; and to continue communications respecting Barns and Wandsworth Commons, Holland Park, and Schemes of the Charity Commissioners. It was reported that St. Clement's Garden, Fulham, had been completed and opened since the last meeting; that Lower Grosvenor Gardens had been opened during the month of September; that four seats had been placed in recesses made in the outside wall of the Vicarage Garden of St. Michael's, South Bromley, E.; that the Association was in communication with the respective authorities relative to the laying-out of disused burial-grounds in Seward Street, E.C., and Church Street, Islington. Progress was reported with regard to the agitation to preserve the Bethnal Green Poor's Land and the Fulham Town Meadows, and amongst many other subjects brought before the meeting were the preservation of the forecourts in Pentonville Road, the site of Coldbath Fields Prison, proposed open spaces in Newington, Hammersmith, and West Ham, and the laying-out of several other grounds. The Secretary announced that H.M. First Commissioner of Works had refused to allow seats to be placed on the triangle at Hyde Park Corner; that the Westminster District Board of Works had declined a similar offer for Knightsbridge Green; and that the London County Council would not take up the question of securing a certain plot of land in Camden Town.

LOCAL INTELLIGENCE.

Shrewsbury Water Supply.—The Shrewsbury Town Council have had under consideration the report of Mr. Baldwin Latham, C.E., on the improvement of the water supply, in which he recommends that a further supply be obtained from the Severn, with works and a reservoir at Briton. The report was adopted, and it was decided to seek Parliamentary powers next session for carrying out the works.

Sutton Sewage Scheme.—The Sutton Local Board has decided to purchase, at a cost of £1,000, some additional land near the proposed site for the disposal of the sewage when the contemplated scheme is carried out.

A Check on Over-crowding.—In his evidence before the Select Committee on Sweating, Dr. James Burn Russell, the Medical Officer of Health for Glasgow, explained a system of ticketing and inspecting of small houses which had been in existence in Glasgow since 1862. Houses containing not more than three apartments and not more in the aggregate than 2,000 cubic feet are measured, and have affixed to them on the outside door a tinplate ticket on which the cubic contents are marked, and the number of inmates allowed in consequence. These plates are a guide to the night inspectors, who compare the number of inmates they find with the number the house ought to have, and a violation of the bye-law involves a summons before the magistrate. The system is said to work very smoothly, and the authorities are satisfied that it is a great preventive of overcrowding.

A Model District.—Little Crosby, during the month of July, had not a single birth or death. In August it was somewhat less fortunate, the record showing one of each.

Adulteration of Drugs.—At a recent meeting of the Sanitary Committee of St. Pancras a question was raised as to the expediency or otherwise of the inspector, under the Adulteration Act, sampling from time to time drugs of different kinds. Dr. Walter Smith moved that instruction be given to the inspector to occasionally sample drugs when he thought the same necessary. This was agreed to.

Presentation to Dr. Arthur Downes.—At a meeting of the Maldon Union Sanitary Authority held on September 24, a beautifully-illuminated address was presented by the Rev. C. B. Leigh (chairman) to Dr. Arthur Downes, M.D., D.P.H., as a token of esteem and regard, and for the efficient manner in which he had carried out his duties as medical officer to the authority during his tenure of office, which extended over ten years. The presentation was made in felicitous terms, and was suitably acknowledged by the recipient, who introduced his successor, Dr. Thresh, of Victoria Park, Manchester, who had been recently appointed Medical Officer to the Chelmsford and Maldon Combined Rural Sanitary Authorities.

Insanitary Condition of Chichester.—The special committee appointed by the Chichester Town Council to fully investigate the sanitary condition of the town have presented their report, in which they recommend many important alterations, the chief of which is the carrying out of a main drainage system for the district. It is freely admitted that the condition of affairs there, from a sanitary point of view, is most unsatisfactory. The whole of its drainage is said to be conducted into cesspools.

Is Tuberculous Meat Wholesome?—The Sheffield butchers recently met in large numbers at a meeting, which was swelled to larger proportions by deputations from adjoining towns, to protest against the action of the medical officer of health, who, instigated by the prosecutions at Glasgow and other places, had condemned the carcase of a young beast which had suffered from tuberculosis. The butchers contend that, in its primary stage, the disease does not render meat unfit for human food; medical opinion, on the contrary, asserts that meat affected by the disease at any period is not wholesome, and not fit for consumption.

The Salford Working Men's Sanitary Association is doing a good work in the borough, inquiring into, exposing, and remedying insanitary conditions, in which it has had the hearty co-operation of the Health Committee and the officers of the corporation.

A complimentary supper, by special invitation of Alderman Dr. Fraser, chairman of the Hull Corporation Sanitary Committee, was given on September 24, to the committee and staff of the Sanitary Department, to "speed the parting guest," Mr. William Jackling, assistant inspector, who had recently been appointed to the Chief Inspectorship of Maidstone. Alderman Fraser occupied the chair, and was supported by Dr. Mason (medical officer of health), Mr. Close (assistant medical officer), Councillors Dr. Holder, Cohen, and Raven, and others. The chairman also presented to Mr. Jackling a marble clock, as a token of the respect he was held in by the staff, and a large number of co-workers added their testimony to his general worth.

Newport (Mon.) Town Council resolved that the Medical Officer's salary as Urban Medical Officer of Health be raised from £120 to £170, the Post Sanitary salary remaining unaltered.

The Birmingham Board of Guardians have decided to advertise for a Master of the Workhouse at a salary of £200, rising to £250, and a Matron at a salary of £60, rising to £85.

At a recent meeting of the Salford Town Council it was stated that the borough was threatened with an epidemic of diphtheria. The hospitals were so over-crowded that the doors had to be shut. An instance was named in which 110 cases were crowded into accommodation intended only for 61.

An Insanitary area in Ancoats.—A district in Ancoats, 32 acres in extent, and with an estimated population of 5,654, is, according to an "official representation" made by Dr. Tatham, Medical Officer of Health to the Manchester Town Council, "unfit for habitation." The evils connected with such houses, courts, and alleys, and the sanitary defects in each area cannot, he contends, be effectually remedied otherwise than by an improvement scheme for the re-arrangement and reconstruction of the streets and houses within such area, or of some such streets and houses. The death-rate over the whole district is over 50 per 1,000; in the courts it exceeds 80, and in one street has exceeded 90. The Council it is thought will adopt the very effectual means suggested by their medical officer of getting rid of these over-crowded and insanitary habitations.

The Burnley Board of Guardians have increased the salary of their Workhouse Medical Officer, Dr. Brumwell, from £60 to £90.

Fever Hospital for Bolton.—Mr. John Wardle, the chairman of the Bolton Rural Sanitary Authority, laid, on October 2, the corner-stone of the new Fever Hospital, which is to be erected on the Pavilion plan.

Insanitary and Over-crowded Dwellings at Durham.—At a recent meeting of the Durham Town Council, Mr. Jepson said that from what he knew there were no less than 3,000 people living in Durham in over-crowded and unhealthy dwellings.

Measles at Rugeley.—The epidemic still continues, and it is calculated by Dr. Freer, the medical officer, that fully 50 per cent. of children under ten years of age have been attacked.

Darwen Infectious Diseases Hospital.—This hospital, which has been erected at a cost of £4,700, was formally opened on October 2. It is composed of three separate substantial one-storey buildings of brick and stone. The large one for small-pox cases; the second for fever cases; and the third is the mortuary.

The salary of Mr. William Jones, Inspector of Nuisances to the Gateshead Urban Sanitary Authority, has been increased from £120 to £160 per annum.

THE INFECTIOUS DISEASE (NOTIFICATION) ACT, 1889.

(52 & 53 Vict. c. 72.)

The following Circular in relation to this Act has been addressed by the Local Government Board to every Vestry, District Board, and Sanitary Authority within the Metropolis:—

Local Government Board, Whitehall,
13th September 1889.

Sir,

I am directed by the Local Government Board to draw the attention of the to the provisions of the Infectious Disease (Notification) Act, 1889, which received the Royal Assent on the 30th ultimo, and which it is hoped may materially assist the local authorities of England and Wales in checking the spread of infectious disease, by enabling them to obtain early and accurate information with respect to the cases of infectious disease occurring within their districts.

The Act will, after the 30th of October 1889, extend to every

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London district, that is to say, to the city of London and the several parishes and districts under the jurisdiction of the Metropolitan Vestries and District Boards and the Local Board of Woolwich.

The local authorities for the purposes of the Act will be, in the City of London, the Commissioners of Sewers; in Woolwich, the Local Board of Woolwich; and in the remainder of the Metropolis, the Vestries and District Boards acting under the Metropolis Management Acts.

Section 3 of the Act provides that where an inmate of any building used for human habitation within a district to which the Act extends is suffering from an infectious disease to which the Act applies, then, unless such building is a hospital in which persons suffering from an infectious disease are received, the following provisions shall have effect, that is to say,—

"(a) The head of the family to which such inmate (in the Act referred to as the patient) belongs, and in his default the nearest relatives of the patient present in the building or being in attendance on the patient, and in default of such relatives every person in charge of or in attendance on the patient, and in default of any such person the occupier of the building shall, as soon as he becomes aware that the patient is suffering from an infectious disease to which the Act applies, send notice thereof to the Medical Officer of Health of the district.

"(b) Every medical practitioner attending on or called in to visit the patient shall forthwith, on becoming aware that the patient is suffering from an infectious disease to which the Act applies, send to the Medical Officer of Health for the district a certificate stating the name of the patient, the situation of the building, and the infectious disease from which, in the opinion of such medical practitioner, the patient is suffering."

Every person required by this section to give a notice or certificate who fails to give the same, will be liable on summary conviction in manner provided by the Summary Jurisdiction Acts to a fine not exceeding forty shillings. If, however, a person is not required to give notice in the first instance, but only in default of some other person, he will not be liable to any fine if he satisfies the court that he had reasonable cause to suppose that the notice had been duly given.

A notice or certificate to be sent to a Medical Officer of Health in pursuance of the above provisions may be sent by being delivered to him, or by being left at his office or residence, or may be sent by post addressed to him at his office or at his residence. Where in any district of a local authority there are two or more Medical Officers of Health of the authority, the certificate must be given to such one of them as has charge of the area in which the patient referred to in the certificate is, or to such other of them as the local authority may from time to time direct.

It will be observed that section 3 refers only to cases where the patient is an inmate of a building used for human habitation. Section 13 of the Act, however, declares that the provisions of the Act shall apply to every ship, vessel, boat, tent, van, shed, or similar structure used for human habitation, in like manner as nearly as may be as if it were a building, and that a ship, vessel, or boat lying in any river, harbour, or other water not within the district of any local authority within the meaning of the Act shall be deemed for the purposes of the Act to be within the district of such local authority as may be fixed by the Board, and where no local authority has been fixed, then of the local authority of the district which nearest adjoins the place where such ship, vessel, or boat is lying. This section will not, however, apply to any ship, vessel, or boat belonging to any foreign government, nor will the Act extend to any building, ship, vessel, boat, tent, van, shed, or similar structure belonging to Her Majesty the Queen, or to any inmate thereof.

The expression "occupier," which occurs in section 3, is defined by section 16 as including a person having the charge, management, or control of a building, or of the part of a building in which the patient is, and in the case of a house the whole of which is let out in separate tenements, or in the case of a lodging-house the whole of which is let to lodgers, the person receiving the rent payable by the tenants or lodgers either on his own account or as the agent of another person, and in the case of a ship, vessel, or boat, the master or other person in charge thereof.

Section 4 of the Act enables the Board from time to time to prescribe forms for the purpose of certificates under the Act, and requires any forms so prescribed to be used in all cases to which they apply.

The Board, in pursuance of this power, have issued an order, a copy of which is enclosed herewith, prescribing the form of certificate (*see below*) required by the Act to be sent to the Medical Officer of Health by the medical practitioner.

The Board also enclose a memorandum for the information of Medical Practitioners, which they suggest might accompany each supply of forms of certificate.

The Act requires the local authority to gratuitously supply forms of certificate to any medical practitioner residing or practising in their district who applies for the same, and to pay to every medical practitioner for each certificate duly sent by him in accordance with the Act a fee of two shillings and sixpence if the case occurs in his private practice, and of one shilling if the case occurs in his practice as medical officer of any public body or institution.

Where a medical practitioner attending on a patient is himself the Medical Officer of Health of the district, he will be entitled to the same fee as if he were not such Medical Officer.

Any expenses incurred by a local authority in the execution of the Act are to be paid as part of the expenses of such authority in the execution of the Acts relating to public health; but the greater part of these expenses, so far as they are incurred in respect of places within the Metropolitan Asylum District will be recouped to the local authority if the directions of section 10 of the Act are observed, which provide that where a Medical Officer of Health receives, in pursuance of the Act, a certificate of a medical practitioner relating to a patient within that district, he shall, within twelve hours after such receipt, forward a copy thereof to the Managers, and that the Managers shall repay to the local authority the amounts paid by the authority in respect of those certificates, of which copies have been sent to the Managers as required by that section.

The infectious diseases to which the Act applies will in all cases include the following diseases: small-pox, cholera, diphtheria, membranous croup, erysipelas, the disease known as scarlatina or scarlet fever, and the fevers known by any of the following names: typhus, typhoid, enteric, relapsing, continued, or puerperal. If the local authority of any district to which the Act extends desire that the Act shall in their district apply to any infectious disease other than the above, they may from time to time by resolution order that the Act shall in their district apply to such disease. In such a case at least fourteen clear days before the meeting at which the resolution is passed is held special notice of the meeting and of the intention to propose such resolution must be given to every member of the authority. The order embodied in the resolution may be permanent or temporary, and, if temporary, the period during which it is to continue in force must be specified therein, and any such order may be revoked or varied by the local authority by which the order is made. But no such order or any revocation or variation of it will be of any validity until approved by the Board.

When it is so approved the local authority must give public notice thereof by advertisement in a local newspaper and by handbills, and otherwise in such a manner as they think sufficient for giving information to all persons interested. They must also send a copy thereof to each registered medical practitioner whom, after due inquiry, they ascertain to be residing or practising in their district.

The order will come into operation at such date not earlier than one week after the publication of the first advertisement of the approved order as the local authority may fix.

In the case of emergency, the resolution may be passed at a meeting of which three clear days' notice has been given. In any such case the resolution must declare the cause of the emergency and be for a temporary order, and a copy of the resolution must be forthwith sent to the Board and advertised, after which the order will come into operation at the expiration of one week from the date of the advertisement, but unless approved by the Board, it will cease to be in force at the expiration of one month after resolution is passed, or such earlier date as may be fixed by the Board.

As the Act will take effect in the metropolis on the 30th of October next, the local authority should, as early as practicable, furnish every medical practitioner residing or practising in their district with the forms of certificate which have been prescribed, and the Board suggest that they should without delay take such steps as may appear to them to be most convenient for giving notice of the requirements of the Act to the inhabitants of the district. Judging from the experience of a large number of provincial towns in which provisions similiar to those contained in the Act have been put in force by means of local Acts, the Board do not anticipate that the local authority will have any practical difficulty in securing a due compliance with the provisions of the statute, and the Board feel assured that the authority will take such action in connection with the notifications which they will receive as will materially assist in checking the spread of infectious disease in the metropolis.

I am, Sir,
Your obedient Servant,
HUGH OWEN,
Secretary.

To the Clerk to

FORM OF CERTIFICATE prescribed by Order of the Local Government Board, dated September 12, 1889.

Certificate of Medical Practitioner.

*.....

To the Medical Officer of Health.

I hereby certify and declare, that in my opinion† an inmate of‡ is suffering from§

Dated the.....day of....., 18.....

(Signed).....

Medical Practitioner.

* Insert the name of the District of the Local Authority.
† Name in full of person suffering from disease.
‡ Number or name of the house, and name of the street or road, and parish or place, where person is resident. In the case of a ship, boat, tent van, shed, or other similar structure, the name or description of the dwelling, and the name of the place where it is situate should be given.
§ Name of disease.

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N.B.—This Certificate must (under a penalty not exceeding forty shillings) be sent to the Medical Officer of Health forthwith on the Medical Practitioner attending on or called in to visit the patient becoming aware that the patient is suffering from an infectious disease to which the Act applies; namely, any of the following diseases:—Small-pox, cholera, diphtheria, membranous croup, erysipelas, the disease known as scarlatina or scarlet fever, and the fevers known by any of the following names: typhus, typhoid, enteric, relapsing, continued, or puerperal, and also any infectious disease to which the Act has been applied by the Local Authority in manner provided by the Act.

On September 19, 1889, the Local Government Board addressed a Circular in almost identical terms to the above to all Urban, Rural, and Port Sanitary Authorities, but containing in addition the following paragraphs in explanation of the course of procedure to be followed on the adoption of the Act:—

It will be observed that, except as regards the Metropolis, the Act will only extend to Urban, Rural, and Port Sanitary Districts in which it is adopted by the sanitary authorities as the local authorities under the Act. The expression "Port Sanitary District" is defined by the Act as meaning the Port Sanitary District of London, and any port or part of a port for which a Port Sanitary Authority has been constituted under the Public Health Acts.

The Act can only be adopted by a resolution passed at a meeting of the sanitary authority. Fourteen clear days at least before such meeting, special notice of the meeting and of the intention to propose the resolution must be given to every member of the authority. The notice will be deemed to have been duly given if it is either (*a*) given in the mode in which notices to attend meetings of the sanitary authority are usually given, or (*b*) where there is no such mode, then signed by the clerk of the sanitary authority and delivered to the member or left at his usual or last known place of abode in England, or forwarded by post in a prepaid letter addressed to the member at his usual or last known place of abode in England.

When a resolution has been passed adopting the Act, it must be published by advertisement in a local newspaper, and by hand-bills, and otherwise in such manner as the sanitary authority think sufficient for giving notice thereof to all persons interested.

The resolution will come into operation at such time, not less than one month after the first publication of the advertisement thereof, as the sanitary authority may fix; and upon its coming into operation the Act will extend to the district. A copy of the resolution must be sent to the Board when it is published.

The following form of resolution has been suggested by the Local Government Board as suitable in this case:—

Resolved:—

That special notice of this meeting and of the intention to propose this resolution having been duly given to each member, this Authority hereby adopt the Infectious Disease (Notification) Act, 1889; and that this resolution come into force on the.....day of.....18.....

That, in order to give notice thereof to all persons interested, this resolution be published in a local newspaper on or before the.....day of.....(being not less than one month before the same is to come into operation) and by hand-bills and*

*NOTE.—*e.g.* by sending a copy of the resolution to each registered medical practitioner resident in the district.

APPOINTMENTS.

MEDICAL OFFICERS OF HEALTH.

ASHMEAD, George, L.R.C.P., L.R.C.S.Edin., has been re-appointed Medical Officer of Health to Brierley Hill and Quarry Bank Urban Sanitary Authorities.

ASHWORTH, J. H., has been re-appointed Medical Officer of Health, to the Halstead Rural Sanitary Authority.

BARNES, Dr. E. G., has been appointed Medical Officer of Health to the Hartismere Rural Sanitary Authority.

BOND, F. F., M.D.Edin., M.B., C.M., has been re-appointed Medical Officer of Health of Eastrick Urban Sanitary District, Yorkshire.

BROMLEY, J. B., has been re-appointed a Medical Officer of Health to the Halstead Rural Sanitary Authority.

CALDERWOOD, George, M.D., M.B., C.M.Glasg., has been re-appointed Medical Officer of Health to the Egremont Urban Sanitary Authority, Cumberland.

CAMERON, James Spottiswoode, M.D., B.Sc.Edin., Medical Officer of Health, Huddersfield, has been appointed Medical Officer of Health to the Borough of Leeds, *vice* Dr. Goldie, resigned. Salary £700 per annum and allowances.

COOPER, William, M.R.C.S., L.S.A., has been re-appointed Medical Officer of Health to the Widnes Urban Sanitary Authorities.

CRAVEN, Robert Musgrave, M.R.C.S., L.R.C.P.Edin., Dip. Public Health Univ. Camb., has been appointed Medical Officer of Health to the various combining Sanitary Authorities of the county of Westmoreland for three years.

EVANS, Charles Walter, M.R.C.S., L.S.A.Lond., M.B.Lond., has been re-appointed Medical Officer of Health to the Bakewell (Derbyshire) Urban Sanitary Authorities.

GAYLOR, Edward, L.R.C.P.Edin., L.F.P.S.Glasgow, has been re-appointed Medical Officer of Health of Belper Rural District and Alfreton and Ripley Union Districts.

GIBSON, James, M.B., C.M., L.F.P.S.G., L.M., has been appointed Medical Officer of Health to the Greetland Union District.

HILL, Alfred Bostock, M.D.Giessen, L.R.C.P.Edin., L.R.C.S. Edin., has been re-appointed Medical Officer of Health of the Borough of Sutton Coldfield.

HOFFMEISTER, William, M.D.Heidelberg, L.R.C.P.Lond., M.R.C.S.Eng., has been re-appointed Medical Officer of Cowes Port Sanitary Authority, Isle of Wight.

HOOPER, A., M.R.C.S.Eng., L.S.A., has been re-appointed one of the Medical Officers of Health to the Burton-on-Trent Rural Sanitary Authority.

HUNTER, Dr., has been appointed Medical Officer to the Glossary Parochial Board.

KELLETT, Robert Guy, L.K.Q.C.P.Irel., L.R.C.S.I., has been re-appointed Medical Officer of Health to the Halstead Urban Sanitary Authority for twelve months, at a salary of £30 per annum.

KINSEY-MORGAN, A., M.R.C.S., L.S.A., has been re-appointed Medical Officer of Health to the Bournemouth Urban Sanitary Authorities.

MEDCALF, E. S., L.R.C.P., L.M.Edin., M.R.C.S., L.S.A., has been appointed Medical Officer for the Town of Hove, Sussex.

NESBITT, Robert, M.D., has been re-appointed Medical Officer of Health to the Sutton-in-Ashfield Urban Sanitary Authority, at his former salary.

PACKMAN, Alfred C. A., M.D., M.R.C.S., has been appointed Medical Officer of Health for the Rural Sanitary District of the Hoo Union, *vice* A. E. Swayne, resigned.

RICHARDSON, W. J., M.D., M.Ch., has been appointed Medical Officer of Health to the Ravensthorpe Urban Sanitary Authority, *vice* Dr. W. Marsden, resigned.

SAWYER, James A. F., has been appointed Medical Officer of Health to the Clevedon Urban Sanitary District, Bedminster Union, *vice* G. F. Pizey, resigned.

SKIPWORTH, H., L.K.Q.C.P., L.M.Irel., M.R.C.S., has been re-appointed Medical Officer to the Quorndon Union District.

SKIPWORTH, Dr. Herbert, has been re-appointed Medical Officer of Health to the Quorndon Urban Sanitary Authority for twelve months, at a salary of £10.

STANDEN, Peter, M.B.Edin., C.M.Edin., has been re-appointed Medical Officer of Health to the Mansfield Rural Sanitary Authority, Notts.

STYLE, F. W., L.R.C.P.Lond., M.R.C.S.Eng., has been appointed Medical Officer of Health to the Hucknall Huthwaithe Urban Sanitary Authority, *vice* T. Shaw, resigned. Salary £20 per annum.

TEW, James Scott, M.B., B.S.Durh., D.P.H.Camb., has been appointed Medical Officer to the Basford Union Rural Sanitary District, *vice* P. Boobbyer, appointed to Nottingham.

WARD, G. S., has been appointed Medical Officer of Health to the Stevenage Urban Sanitary District, Hitchin Union, *vice* Dr. W. Jenner.

WILLIAMS, Humphrey Lloyd, M.R.C.S., L.S.A., has been appointed Medical Officer of Health to the Flint Urban Sanitary Authority.

WRIGHT, Henry, L.R.C.P., L.M.Edin., M.R.C.S.Eng., has been re-appointed Medical Officer of Health to the Gainsborough Rural Sanitary Authority. Salary £50 per annum.

WYNNE-SMITH, William Arnold, M.D.St. Andrews, M.R.C.S. Lond., has been appointed Medical Officer of Health to the Mutford and Lothingland Rural Sanitary Authority, at a salary of £50 per annum.

POOR-LAW MEDICAL OFFICERS.

BAYLEY, R. L., L.R.C.P.Lond., M.R.C.S.Eng., L.S.A., has been re-appointed Medical Officer to the Old Swinford 2nd District of the Stourbridge Union.

BROWN, Dr. Robert, has been appointed Medical Officer for the Prees District, Wem Union, *vice* Mr. H. Tuck, M.R.C.S., resigned.

COTES, Digby Francis Baynes, L.S.A.Lond., M.R.C.S., has been appointed Medical Officer and Public Vaccinator for the Parish of Teddington, Kingston Union.

COX, J. Hayden, has been appointed Medical Officer to the Cottenham District of the Chesterton Union, at a salary of £50 per annum and extras.

DICKMAN, Henry George, B.M. and M.S.Edin., has been appointed Medical Officer to the West District of Buntingford Union and Workhouse, salary £100 per annum.

DOUGHTY, David Somerville, M.B., Mast. in Surg.Edin., has been appointed District Medical Officer to the Ireby District of the Wigton Union. Salary £11 per annum.

DOWNES, W., has been appointed Medical Officer to the Chesterton District, Wolstanton and Burslem Union, *vice* Mr. J. H. Maguire, resigned.

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ELSOM, F. J., L.R.C.P.Lond., Edin., M.R.C.S., has been re-appointed Medical Officer and Public Vaccinator of Cuckney District, Worksop Union.

EVANS, William, L.R.C.P., M.R.C.S., Llanerchymedd, has been re-appointed Medical Officer and Public Vaccinator of the Llanerchymedd District, Anglesey Union.

FISHER, P. C., F.R.C.S., L.S.A., has been appointed Medical Officer of Sarratt District of the Watford Union.

FORSTER, Thomas Frederick, M.R.C.S.Eng., L.R.C.P.Lond. & L.S.A., has been appointed Medical Officer to the Burton District of the Kendal Union, at a salary of £42 per annum.

FRASER, D. A., M.R.C.S.Eng., L.S.A., M.D.Brussels, has been appointed Medical Officer to the No. 4 District of the Totnes Union, at a salary of £35 per annum.

GABE, J. Rees, M.D., M.R.C.S.Eng., L.S.A., has been appointed Public Vaccinator for Holborn, *vice* J. Norton, M.R.C.S., L.S.A., deceased.

GIBBENS, F. E., L.R.C.P.Lond., M.R.C.S., has been appointed Medical Officer to the 6th District of the Romford Union, *vice* Mr. E. Callaway, resigned.

GLINN, C. F., L.R.C.P.Lond., M.R.C.S., L.S.A., has been appointed Medical Officer of Hatherleigh District of the Okehampton Union, *vice* Mr. H. H. Parsloe, resigned.

GREENE Arthur J.,L.R.C.S., L.K.Q.C.P.Irel., has been appointed Medical Officer of the Burwash District of the Ticehurst Union, *vice* Mr. G. C. Wilkin, resigned.

GRIFFITH, Patrick G., has been appointed Medical Officer to the 4th District Saffron Walden Union, *vice* Mr. F. Edwards, resigned.

HAINS, L., L.R.C.P. & S.Edin., has been appointedMedical Officer to the No. 3 District of the Totnes Union, at a salary of £32 per annum, *vice* J. Raby, resigned.

HANSON, E. R., L.R.C.P.Edin., L.R.C.S.Edin., has been appointed Medical Officer to the 8th District of the South Molton Union, salary £30 per annum.

HARDAY, George, M.R.C.S.Eng., L.S.A.Lond., has been re-elected Medical Officer for the Yelvertoft District of the Rugby Union for the ensuing three years.

HUBAND, A., M.R.C.S.Eng., L.S.A.Lond., &c., has been appointed Medical Officer and Public Vaccinator to the Guardians of the Loughborough Union for the Sutton District. Salary £15 per annum with usual vaccination fees.

HUTCHINSON, John Thomas, L.R.C.P.Edin., has been appointed Medical Officer to the Newbottle District of the Houghton-le-Spring Union, at a salary of £30 per annum.

JOHNSON, Francis, M.R.C.S., has been appointed Medical Officer of the Beaconsfield District of the Amersham Union, *vice* Mr. Thomas Cussen, resigned.

MCNAIR, George, L.R.C.P.Lond., M.R.C.S., has been appointed Medical Officer of the Fritwell District of the Bicester Union, *vice* Edward W. Turner, deceased.

MASSIAH, Benjamin Jones, M.R.C.S.Eng., has been appointed Medical Officer to the 10th District of the Chorlton Union.

MATHEW, Charles Pynsent, L.R.C.P.Lond., M.R.C.S.Eng., L.S. Apoth. Lond., has been appointed Medical Officer to the Honiton Union (District No. 5), *vice* Dr. G. M. C. Saunders, deceased, at a salary of £45 per annum.

MILLER, Hugh, M.D., has been appointed Public Vaccinator to the Birkenhead Union, *vice* P. M. Braidwood, M.D., resigned.

MUGFORD, S. A., L.R.C.P.Lond., M.R.C.S., has been appointed Medical Officer of Ardleigh and Great Bromley Districts of the Tendring Union, *vice* Dr. W. Conner, resigned.

OGLESBY, H. A., L.R.C.P.Edin., L.M., M.R.C.S., has been appointed Medical Officer to the 2nd District of the York Union, *vice* Mr. H. E. Spencer, resigned.

PAPILLION, James W., M.R.C.S.Eng., L.S.A., has been appointed Medical Officer of Brent Knoll District of the Axbridge Union, *vice* Mr. A. M. Bayliffe, resigned.

READ, H. W. K., has been appointed Medical Officer for the Towcester District and the Workhouse of the Union, *vice* Mr. A. G. Evans, deceased.

REARDON, D. F. B., L.R.C.S.Irel., L.K.Q.C.P.Irel., L.M., has been appointed Medical Officer of the Bruff Dispensary District of the Kilmallock Union, *vice* Mr. Macnamara, resigned.

RUTHERFORD, W. G., L.R.C.S., L.M., L.K.Q.C.P.Irel., has been appointed Medical Officer of the 7th District, Newport Pagnell Union, *vice* Mr. W. H. Ryan.

SHELDON, Robert G., has been appointed Medical Officer for the Kirkdale District of the West Derby Union, *vice* Mr. J. Bark, resigned.

STAMFORD, W. A., M.R.C.S., has been re-appointed Medical Officer of the 6th District of the Mansfield Union.

TAYLOR, Reginald, M.R.C.S., L.S.A., has been appointed Medical Officer of the Gray's Inn Road Workhouse Infirmary.

THOMAS, David E., M.R.C.S., L.S.A., has been appointed Medical Officer of the Stradbroke District of the Hoxne Union, *vice* Mr. C. G. Read, resigned.

THOMAS, Evan C., has been appointed Medical Officer for the Llanybyther District of the Lampeter Union, *vice* Mr. J. H. Williams, deceased.

THOMSON, Malcolm Edward, L.R.C.S.Irel., L.R.C.P.Edin., has been appointed Medical Officer of the St. Sepulchre District, Northampton Union.

WADE, Charles, L.R.C.P.Lond., M.R.C.S.Eng., has been appointed Medical Officer of Health and Public Vaccinator to the Boscastle District of the Camelford Union, *vice* Arthur Wade, resigned.

WALLER, Walter Augustus Ewen, L.R.C.P.Lond., M.R.C.S.Eng., has been re-appointed Medical Officer for the Bilton District of the Rugby Union.

CERTIFYING FACTORY SURGEONS.

BULTEEL, Marcus H., L.R.C.P.L., M.R.C.S.Eng., has been appointed Certifying Factory Surgeon for Devonport and Stonehouse District, *vice* L. Pilkington Jackson, deceased.

WETWAN, William Albert, M.R.C.S.Eng., L.S.A., has been appointed Certifying Factory Surgeon to the Bridlington District, *vice* C. F. Hutchinson, M.D., deceased.

INSPECTORS OF NUISANCES.

BECKTON, John, has been appointed Inspector of Nuisances to the Holme Cultram Urban Sanitary Authority, Cumberland, *vice* Mr. Robert Stubbs, resigned.

BROOKS, Joseph, of Liverpool, has been appointed a Sanitary Inspector for the Shelton District of Hanwell, at a salary of £100 per year.

BROOKS, Joseph, has been appointed Assistant Inspector of Nuisances for the County Borough of Hanley, at a salary of £104 a year.

BURROWS, J. B., has been re-appointed Inspector of Nuisances to the Sutton-in-Ashfield Urban Sanitary Authority.

COOPER, W. G., has been re-appointed Inspector of Nuisances to the Bournemouth Local Board.

CROZIER, G., has been appointed Inspector of Nuisances to the Leyland Urban Sanitary Authority at a salary of £30 per annum, *vice* Mr. T. F. Hutchinson, resigned.

GRICE, Joseph W. W., has been appointed Inspector of Nuisances to the Hoole Urban Sanitary Authority, *vice* Mr. C. A. Ewing.

IRVING, William, has been appointed Inspector of Nuisances to the Wigton Urban Sanitary Authority, *vice* Mr. J. Iredale, resigned.

IVEY, B. E., has been appointed Inspector of Nuisances to the Ormskirk Urban Sanitary Authority, *vice* Mr. J. E. Jackson, resigned.

JECKLING, W., of Hull, has been appointed Inspector of Nuisances to the Maidstone Local Board.

LUGG, John, has been re-appointed Inspector of Nuisances to the Bideford Urban Sanitary District, Bideford Union.

QUAIFE, Mr., has been appointed Sanitary Inspector to Newhaven Urban and Port Sanitary Authority.

ROBERTS, John Church Hill, Bettwsycoed, has been appointed Inspector of Nuisances to the Llanrwst Union Rural Sanitary Authority, at a salary of £80 per annum.

SALT, Samuel, of Hanley, has been appointed a Sanitary Inspector for the Hanley District of Hanley, at a salary of £100 per annum.

WHITE, W. O., Inspector of Nuisances for the Banbury Rural Sanitary Authority, has been appointed to undertake the duties of Inspector for the Urban Sanitary Authority, *vice* Mr. D. Dixon, deceased.

WYATT, Mr., has been appointed Inspector of Nuisances to the Paignton Urban Sanitary Authority, at a yearly salary of £30.

PUBLIC ANALYST.

REED, Lester, F.I.C., has been appointed Public Analyst for the Borough of Croydon.

SURVEYORS.

CATLEY, W. J., has been re-appointed Surveyor to the Midsomer Norton Urban Sanitary Authority for one year.

CROZIER, G., has been appointed Assistant Surveyor to the Leyland Urban Sanitary Authority, at a salary of 17s. 8d. per week.

MAWLEY, Mr., Engineer to the Corporation of the City of York, and formerly of King's Lynn, has been elected Surveyor to the Borough of Leicester, at £700 a year, in succession to Mr. Gordon, appointed Engineer to the London County Council.

CLERKS.

BAKER, A. E., has been appointed Assistant Clerk in the offices of the Guardians of St. Mary Abbott's, Kensington, *vice* Mr. D. H. Hose, resigned.

GROUT, F., has been appointed an Assistant Clerk in the offices of the Guardians of the Strand Union, *vice* Mr. W. Lonet, resigned.

HOLMES, Mr., has been appointed Clerk to the Tyne Port Sanitary Authority.

LYNDON, G. F., has been appointed Assistant Clerk in the offices of the Guardians of the Township of Manchester.

WENDEN, J. G., has been appointed Clerk to the Guardians of the Dursley Union, *vice* Mr. G. Wenden, resigned.

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RESIGNATIONS.

BARRETT, W. A. D., Medical Officer of the South Welney District of the Downham Union.

CURRIE, John, Medical Officer of the No. 4 District of the Totnes Union.

DEELEY, Dr. W., Medical Officer of the Leavening District of Malton Union.

DREW, J. B., Medical Officer of the Workhouse and of the West District of the Buntingford Union.

HINDLE, F. J., Medical Officer of the Sutton District of the Loughborough Union.

LLOYD, Thomas L., Medical Officer of the No. 4 District of Drayton Union.

MACLAREN, Dr., Medical Officer of the Stickney District of the Spilsby Union.

MCLAUCHLAN, Dr. T. G., Medical Officer of the Halesowen District, Stourbridge Union.

NEWBERRY, W. J., Medical Officer of the Burton District of the Kendal Union.

RABY, Dr., Medical Officer of Health to the Totnes Urban Sanitary District, and Medical Officer of the No. 3 District of the Totnes Union.

SMITH, J. P., Medical Officer of Health to the Mutford and Lothingland Rural Sanitary Authority.

STEVENS, Dr., Medical Officer of Health to the Droitwich Urban Sanitary Authority.

TUCKER, Joseph, Medical Officer of the 8th District of South Molton Union.

WHITE, D., Medical Officer of the Ireby District of the Wigton Union.

VACANCIES.

RESIDENT MEDICAL OFFICER.—There is a vacancy at the Jersey General Dispensary and Infirmary for a Resident Medical Officer. Salary, £120 a year. Applications to the Hon. Secretary, on or before Oct. 19.

MEDICAL OFFICER required by the Ballinrobe Union. Salary, £100 per annum, with £33 6s. 8d. as Consulting Sanitary Officer. Applications to Mr. John Walsh, Clerk of Union. Election on Oct. 19.

MEDICAL OFFICER.—The Guardians of the Stokesley Union require a Medical Officer for the Union Workhouse and the Stokesley District. Salary £54, exclusive of vaccination and other fees (averaging about £28). The Medical Officer to supply all medicines (except quinine, cod-liver oil, and sarsaparilla). Applications, and not more than 3 recent testimonials, to be sent, not later than Oct. 19, to Thomas Sowerby, Esq., Clerk, Stokesley.

ASSISTANT MEDICAL OFFICER for the Dorset County Asylum. Must be doubly qualified, registered, and single. Salary, £120 per annum, with board and residence. Applications, with not more than 6 recent testimonials, to be forwarded to Dr. Macdonald, Medical Superintendent, on or before Oct. 19.

JUNIOR ASSISTANT MEDICAL OFFICER for the Hants County Asylum. Must be doubly qualified, and registered under the Medical Act. Age not to exceed 27. Must be unmarried. Previous experience not necessary. Salary £100 per annum, with furnished apartments, board, washing, and attendance. Applications, with testimonials, not later than Oct. 17, to the Committee of Visitors, Knowle, Fareham.

A BOROUGH SURVEYOR AND WATERWORKS ENGINEER required for the Borough of Macclesfield, salary £200 a year and the keep of a horse. Will be required to devote his whole time to his duties. Applications, with not more than three recent testimonials, not later than October 23, marked "Borough Surveyor," to W. Frederick Taylor, Esq., Town Clerk, Macclesfield.

SURVEYOR required by the Kettering Local Board, Northamptonshire. Must devote the whole of his time; will be required to enter upon his duties on January 1 next; must hold certificate from Royal Institute of British Architects of competency as a building surveyor and have practical knowledge of road-making and repairing, &c. &c. Commencing salary £200 a year. Applications on or before October 25, endorsed "Surveyor," to Henry Lamb, Esq., Clerk to the Board, Kettering.

SURVEYOR.—The Corporation of Stockport require the services of a Surveyor, who will devote his whole time to the duties which will commence on January 1 next. Salary £400. Applications, addressed "Appointment of Borough Surveyor," to reach Walter Hyde, Esq., Town Clerk, Stockport, on or before November 8.

DISTRICT SURVEYOR AND INSPECTOR OF NUISANCES.—The Maidstone Union Rural Sanitary Authority require the services of a District Surveyor and Inspector of Nuisances. Joint salary for the two offices £250 (£150 for Inspector of Nuisances, £75 for Surveyor of District Highways, and £25 additional so long as the authority have the management of the main roads). The person appointed to pay his own travelling expenses, and to be prohibited from following any other business or profession, or holding any other appointment. Previous knowledge of the duties desirable. Applications, with not more than 3 recent testimonials, to be sent to Robert Hoar, Esq., Clerk, 9, King Street, Maidstone, not later than Wednesday, Oct. 23.

INSPECTOR OF NUISANCES AND SURVEYOR.—The Chepstow Urban Sanitary Authority will, on November 4 next, proceed to the election of Inspector of Nuisances and Surveyor. Salary will be £100 (£40 Inspector, £60 Surveyor). Applications (accompanied by not more than three recent testimonials) to be sent to Mr. Fothergill Evans, Clerk to the Local Board, not later than October 31.

INSPECTOR OF NUISANCES.—The Borough of Workington Urban Sanitary Authority require the services of an Inspector of Nuisances for their district; area, 1,687 acres; population, 24,000. The person appointed to hold office for three months on probation, and if he gives satisfaction, appointment will be made for one year. Applications, stating qualifications and salary required, on or before October 30, to John Warwick, Esq., Town Clerk, Workington.

DEATHS.

BENTON, S., Medical Officer of the A District, St. George's Union, and of the Buckingham Palace Road Workhouse.

BRIDGER, Dr., Medical Officer of the Cottenham District of the Chesterton Union.

CHAPMAN, G. H., Vaccination Officer for the Attercliffe District of the Sheffield Union.

CHAPPELL, B., Inspector of Nuisances to the Linton Rural Sanitary Authority.

DICKINSON, G. M., Medical Officer of No. 6 District of the Lutterworth Union.

DIXON, D., Inspector of Nuisances to the Banbury Urban Sanitary Authority.

FORBES, Dr. W. G., Medical Officer of the Stokesley District, Stokesley Union.

PEAT, Thomas, M.R.C.S., Medical Officer of the 3rd, 4th, and 10th Districts of the Tendring Union.

SAUNDERS, Dr. G. M. C., Medical Officer of the 5th District of the Honiton Union.

TENNANT, C., Medical Officer of the Newbottle District of Houghton-le-Spring Union.

TURNER, E. W., Medical Officer of the Fritwell District of the Bicester Union.

CONTRACTS.

FOR the erection of new Administrative Department at the Bristol Lunatic Asylum, Messrs. Crisp & Oatley, Clare Street, Bristol, architects. Highest tender: J. Reed, Plymouth, £45,132; lowest: A. J. Beaven (accepted), £36,000.

WEST HAM MAIN DRAINAGE EXTENSION (Contract No. 4).

The West Ham County Council invite tenders for the construction of about 1,850 lineal yards brick-lined concrete and iron-pipe, &c., Sewers, 4 ft. diameter, together with No. 25 manholes, and connections with existing sewers.

Plans may be seen, and particulars obtained, at the office of Mr. Lewis Angell, M.I.C.E., Borough Engineer, Town Hall, Stratford, E.

Tenders, endorsed "Tender for Hermit Road Sewer," to be sent to the undersigned at the Town Hall, West Ham, by Oct. 22.

FRED. E. HILLEARY, Town Clerk.

The Rural Sanitary Authority of Stockport invite tenders for the construction of SEWAGE TANKS, and other works in connection therewith, at Offerton.

Drawings and specifications may be seen, and all information obtained, at the office of Mr. Edward Sykes, C.E., Surveyor to the Authority, Union Works, Shaw Heath, Stockport.

Tenders, endorsed "Sewage Disposal Works," to be sent to Mr. F. W. Johnson, Clerk, Shaw Heath, Stockport, by Oct. 21.

LAMBETH INFIRMARY.

The Guardians of the Poor of the Parish of Lambeth invite tenders for the construction of Padded Room adjoining the Lunatic Wards at Lambeth Infirmary, Brook Street.

Form of tender may be obtained at the office of the Architect, Mr. T. W. Aldwinckle, 2, East India Avenue, Leadenhall Street, and must be sent to the undersigned by Oct. 16.

W. B. WILMOT, Clerk.

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BOROUGH OF PRESTON.—SEWERAGE WORKS (Contract No. 1).

The Corporation of Preston invite tenders for the constructing and completing a Storm-water Culvert, 7 ft. internal diameter, from the end of existing main sewers at Marsh End to the river at Chain Caul, a length of about 2,493 yards; and also for a Culvert, 3 ft. 6 in. internal diameter, from Bateny Lane to the main sewer crossing the Marsh, a length of about 73 lineal yards.

Specification and form of tender to be obtained from Mr. Hudson Reah, C.E., 16, Church Street, Preston.

Tenders, endorsed "Tender for Storm Culverts," to be sent to the office of the undersigned by Oct. 18.

HENRY HAMER, Town Clerk.

Town Hall, Preston.

CONSTRUCTION OF SEWER.

The Health Committee of the County Borough of St. Helens invite Tenders for the construction of a Main Intercepting Sewer, comprising about 1,010 lineal yards of 6 feet culvert, 880 lineal yards, egg-shaped, 6 feet by 4 feet, and 920 lineal yards, egg-shaped, 4 feet by 2 feet 8 inches, and other works in connection therewith.

Plans and specifications may be seen, and forms of tender and bill of quantities obtained, at the office of Mr. Geo. J. C. Broom, A.M.I.C.E., Borough Surveyor, Town Hall, St. Helens.

Tenders, endorsed "Tender for Intercepting Sewer," to be delivered at the above-named office not later than October 29.

CONTRACT FOR IRON PIPES.

The Council of the Borough of Great Yarmouth invite Tenders for the supply of from 250 to 300 tons of Cast-iron Water-pipes, with the usual special castings. They also invite Tenders for the supply of Valves and Hydrants for the same.

Specifications and form of tender may be obtained at the office of Mr. J. W. Cockrill, A.R.I.B.A., Borough Surveyor, Municipal Buildings, Great Yarmouth.

Tenders to be delivered at the office of Mr. T. M. Baker, Town Clerk, Municipal Buildings, Great Yarmouth, before Thursday, October 24.

SURFACE DRAINAGE.

The Aldershot Local Board of Health invite Tenders for executing Works of Surface Drainage within the District of Aldershot.

Plans and specifications may be seen on application to Mr. B. Rushford, the Board's Surveyor, at the offices of the Board, in Victoria Road, Aldershot.

Tenders, endorsed "Tenders for Surface Drainage," to be sent to Mr. W. E. Forster, Clerk, at the above-named offices, not later than October 22.

MOUNTAIN ASH LOCAL BOARD WATERWORKS (Contract No. 3).

In order to give further time to contractors to make up their tenders, the Mountain Ash Local Board hereby give notice that the Tenders for Storage Reservoir in the Clydach Valley, and Service Reservoir at Buarth Chapel, &c., will not be opened by the Board until Monday, October 28.

MAIN DRAINAGE.

The Corporation of Hastings invite Tenders for the construction of Main Sewers, Storm-water Outfall, Weir, Penstock Chamber, and other works in connection therewith, in the neighbourhood of Queen's Road, Hastings.

Plans may be seen, and Specifications and form of Tender obtained, at the office of the Borough Engineer, Mr. P. H. Palmer, A.M.I.C.E., Town Hall, Hastings.

Tenders, endorsed "Tender for Main Sewers," to be delivered at the office of Mr. Geo. Meadows, Town Clerk, not later than October 28.

LEEDS CORPORATION WATERWORKS.

Tenders are required, on or before November 4, for the extension of the Gauge Basin on Harewood Embankment at Eccup Reservoir. Quantities may be obtained at the office of Mr. Thomas Hewson, M.I.C.E., Borough and Waterworks Engineer, Municipal Buildings, Leeds.

WATERWORKS.

The Methley Local Board invite Tenders for casting, laying, and pointing about 21,000 yards of cast-iron pipes, varying from 6 in. to 3 in. diam.

Plans and Specifications may be seen, and form of Tender obtained, at the office of Mr. J. Richardson, C.E., Methley Park, near Leeds.

Tenders must be sent to the undersigned not later than October 21, endorsed "Tender for Pipe Laying."

ROBT. S. WIGGIN, Solicitor,
Clerk to the Local Board.

COMPETITION.

THE CHEMISTRY OF BUTTER-FAT.

THE Royal Society of Science, Denmark, offers a prize of Kr. 600 for a chemical investigation as to the fatty acids present in butter-fat; the relative amount of each; methods employed when new or of interest; the proportion between oleic and palmetic acid, with its higher homologues. Papers to be sent to Dr. H. G. Zeuthen, secretary of the Society, before October 31. The name of author and motto adopted to be sent in separate sealed envelope.

NOTES AND QUERIES.

Having for some time back been in the receipt of Queries appertaining strictly to sanitary work, and which it would be easy to answer without having to refer our correspondents to competent professional advisers, we have opened a column in which to register such Queries and Replies thereto as can fairly be expected from us; and our subscribers and readers are invited to make such use of this column as will tend to benefit themselves and the community. Both Queries and Replies will, however, be subjected, if unnecessarily long, to a strict curtailment.

THE USE OF CONCRETE.

Property built on a site where there is a great depth of clay; no roads and no drainage for surface water; the surrounding lands flat and also very wet; water-supply collected from roofs and stored in underground tanks, having no overflow, but ventilated; pipes for conducting the rain-water carefully jointed in cement; dry-earth system for closets. I should like to know if, under such very unsatisfactory and unsanitary conditions, whether concrete 6 in. thick, made 10 to 1, laid under pipes, would be safer for pipes and tanks, and the water less likely to become contaminated than if the pipes were laid on the solid clay, and carefully rammed? I have proved this experimentally, but I should be glad if you, Sir, would give your opinion, or if some of my brother readers would give their experience, or express their opinion on the subject.

E. S. W.

[Cement concrete made even 3 to 1 is of very little avail in making lines of pipe watertight. A thin layer of concrete at the bottom of trench is of value, because you can insure this being finished to an even and true line. To render drains watertight, pack it round with puddled clay 9 inches thick.]

THE SEPARATE SYSTEM OF SEWAGE.

For the past two years the question of sewerage has been agitating the Town Council of their city of some 15,000 inhabitants. As solid gneiss is nowhere far from the surface, the lowest estimate places the cost at about £180,000 or £12 per cap. Some consider that the separate system of drainage would be the most economical; but few people here seem to know anything about the method. Any information would be gladly received by the writer as to the best authorities on the subject, where to procure their works, and a list of towns where the separate system has been tried, and with what result.

C. F. NEWCOMBE, M.D., Victoria, B.C.

P.S.—In Parkes' Hygiene the works of Mr. Menzies and Colonel Ewart are mentioned. Where can they be procured?

[The separate system of sewerage would probably be far the most economical in the town in question. Pipe sewers laid in the streets would receive the house drainage, whilst surface and storm waters would be conveyed away by channels and gutters to the nearest available outlet. The amount of excavation required would be far less than for the large brick sewers required under the combined system, and the ultimate purification and disposal of the sewage would be rendered easier and less costly. The town being situated on solid rock is probably not in want of any subsoil drainage, but if this is requisite it could be carried out by laying porous tile drains in the same trenches as the pipe sewers, but not in any way communicating with them.

Towns sewered on the separate system are:—Penzance, Carlisle, Dover, Chelmsford, Ely, Rugby, Stratford-on-Avon, Gloucester, Southampton, Leamington, Penrith, Alnwick, Morpeth, Worthing, Ashby-de-la-Zouch, Slough, Reading, Oxford, Halstead. In many of these towns the old brick sewers still receive the rain, surface, and subsoil waters, whilst the new pipe sewers carry the house (water-closet) sewage.

Works and authorities to be consulted:—9th Report of the Medical Officer of the Privy Council; Rivers Pollution Commission, 1st Report; Baldwin Latham (Sanitary Engineering); Mr. Menzies (Management and Utilisation of Sewage); Bailey Denton; B. F. Grantham (Lecture on the Separate System at the Parkes Museum 1886); Edwin Chadwick; Corfield and Parkes (Treatment and Utilization of sewage, 3rd edition, 1887); 2nd Annual Report of the State Board of Health New York, 1882, containing description of Colonel Waring's separate sewerage works for Memphis and Pullman, U.S.A.—ED.]

ERRATUM.

THE report quoted from in our note entitled "Milk Supply and Sanitation," on page 108 of our last month's issue, was that of Dr. James MacLintock, M.D., B.Sc., Medical Officer of Health for Bradford, and not, as stated, the report of Dr. Herbert Humphreys, the medical superintendent of the Bradford Fever Hospital.

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ORIGINAL PAPERS.

HAS THE DUAL NOTIFICATION OF INFECTIOUS DISEASES BEEN A SUCCESS?

By ROBERT FARQUHARSON, M.D., M.P.

AT the very fag-end of last session of Parliament a Bill of very considerable importance slipped quietly into the Statute Book. Its earlier stages promised to be stormy, for the second reading stirred up much hostile criticism, and amendments showered upon the Notice Paper in such profusion as to foreshadow a fatally prolonged discussion in Committee. But expecting trouble in the future, Government craftily postponed its final appearance till the last possible moment, and by that time grouse and holiday air had been too much for its opponents, and it went through without a jarring word; and now, secure from controversy and hostile divisions and professional disapproval, it has peacefully become an Act, and rests its base of operations firmly on legal sanction; and although the *rôle* of the prophet is proverbially a dangerous one, I may safely predict that this little bit of unobtrusive work marks an epoch-making point in sanitary progress, and will not only improve the public health, but directly save many lives.

The object of the present paper is to take a general survey of the subject, and to supply the reader with a sufficiently comprehensive *précis* of the arguments for and against to enable him to form his own opinion. But before I begin, let me dip for a moment or two into history; and I wish to do so more especially as an answer to those who are never tired of sneering at the legislative efforts of private members, and of praising Warton and Biggar and other active blockers for the wholesale way in which they strangle our innocent offspring. It is quite true that many of the unofficial proposals brought before the House are crude and unpractical, and richly deserve their fate. But, on the other hand, I believe I am fully justified in saying that the germ and even the substance of many accepted measures of secondary importance has been constructed by the previous unappreciated efforts of the rank and file. Public opinion has been formed and stimulated, attention, both in and out of the House, has been directed to the necessities of the particular case, and to the arguments by which they are supported; and when at last Government takes the matter in hand, it finds the ground dug and the seed sown, and a copious crop ready to spring up under the sunshine of official approval.

Here we have a case strictly in point. It is now five or six years since Mr. Hastings, backed by some like-minded colleagues, brought in his first Notification Bill. After much weary waiting, he succeeded in getting a place one Wednesday afternoon, and put his case, as might have been expected, clearly and well. Mr. Hopwood came next, and I was waiting to follow him, when the temptation, not unnaturally, seized some of those present to cut the Gordian knot of debate by a certain rough and ready method of closure. The afternoon was fine, the House was thin. Why not try a count? And so, in the middle of the worthy Q.C.'s speech, the motion was made that there were not forty members present. The orator himself, with his words still hanging about his lips, hurried briskly away, and the Speaker, being unable to find more than a fragment of the necessary quorum, adjourned the proceedings, and the Bill was lost. The same bad luck has followed it ever since; session after session has its sponsor balloted without result; and although it has regularly made its appearance on the Notice Paper, its place has never given any hope of practical result, and it has meekly shared in the annual massacre which marks the close of each Parliamentary year. But just at the moment when its fortunes seemed lowest, victory was near. Mr. Ritchie is bold as well as hard-headed, and readily yielded to pressure brought to bear on him from both sides of the House. But I do not believe that even he would have taken the Bill under his powerful parentage had it not been for the previous efforts of Mr. Hastings, and more especially for the evidence taken before the Police and Sanitary Committee, over which that gentleman so ably presides. Armed with the double weapons of knowledge and experience, the President of the Local Government Board has been enabled to appreciate the hopelessness of preventing the spread of infectious disease unless early detection is followed by compulsory notification and, if possible, isolation. Many great towns having voluntarily adopted this principle by local Act, it seemed only reasonable to enable others to follow their example without setting in motion the expensive machinery of a Parliamentary Committee; and the Act which he has passed, if not perfect in all respects, effects this good end, and advises, if it does not compel, localities to follow the good example of others.

Now, at first sight, the advantages of notification seem so obvious, and the drawbacks so slight, that it is difficult to see where the objections to its universal adoption come in. We all admit that health and life are too frequently destroyed by diseases which have no right to exist at all, if reasonable "stamping out" precautions were adopted. Science has already done much to protect us, but whilst typhus and relapsing fevers are now matters of ancient history, and cholera hesitates to plant itself on such uncongenial soil, ignorance and prejudice and indifference still stand in the way of the realization of the highest ideal of preventive medicine, and taking things as we find them, and admitting that we must, for the present at all events, endure the intrusion into previously sound communities, of morbid agencies whose very existence is a reproach to civilization, we are bound to consider in what practical way we can best prevent the spread of an evil whose unbidden visit we are powerless to avert.

The advantages of notification.

Take, for example, the case of scarlet fever. An epidemic springs up in a town or village; how it came there may be certain or obscure. The source of infection may be obvious enough, or all traces of its arrival may be so absolutely invisible that the idea of spontaneous generation seems to come within the limits of possibility. But there it is; and although we need not now attempt to shut the door to keep it out, we can at least keep it in, and prevent it from starting fresh *foci* of infection and danger; and with this object, we call in our medical officer of health, and place on him the responsibility of seeing that every proper precaution is fully carried out, and that if the sufferer cannot be effectively isolated at home, he must be removed to hospital and placed in quarantine there. Nothing can be more reasonable than all this, for whilst the general public is protected from the probability of serious risk, the patient himself is well looked after, and has the satisfaction of feeling that his unfortunate attack will not be the means of

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injuring the health of others; and this to a sensitive mind must be no insignificant consolation.

What, then, are the objections? How do the arguments take any kind of plausible shape against proposals of such a practical and sensible kind, and which can rest on the firm basis of successful experience? They are in the main two-fold. The first, however, need not detain us long. It takes the lofty ground of defending personal liberty, and protests, with the aid of societies and pamphlets and elaborate organizations, against the so-called meddlesome intrusion of sanitary regulation into the castellated sanctity of the Englishman's home. By all means, say we, let fanatics of this kind catch any disease they like, so long as they keep it to themselves; but they cannot be surprised if others object to be drenched with infection in order to minister to their fads. Argument is thrown away upon those who hold abstract views on the right of every rational being to do as he pleases, and all that we can do, after having effectually pointed out the error of their ways, is to appeal to the legislature to protect us from the danger of having such unsatisfactory neighbours. The second class of objection, however, is much more formidable, and requires more careful treatment. It comes from the medical profession itself, from men of eminence and position, who are strongly in favour of notification, but who think that the responsibility should be laid on the householder and on him alone; and they formulate their points very concisely and distinctly under two specific headings.

The objections to notification.

1. That the dual notification, as it is called, under which the doctor makes a separate report of the nature of the disease, is objectionable, because it impairs the confidential relations between his patient and himself; and

2. That the doctor's primary intervention in the matter will prevent his being called in at all, and that this has resulted in an actual increase of infection in those towns where the dual system is in force.

Beginning, then, with No. 1, I may say at the outset that, whilst sympathising sincerely with the honourable sentiment which underlies the objection, I am quite unable to accept the principle which it involves. Some controversialists have even gone so far as to compare the doctor's position with that of the priest, and to say that professional secrets are as sacred as those which are communicated under the confidential freedom of the confessional. But I hardly think that this view can be generally adopted. In the one case, the statements made to an officiating clergyman are voluntarily offered up under the authority of the Church, and are protected by the privilege investing the holy office of the hearer. In the other, the facts of sickness and suffering are discovered for himself by the medical man, and he may claim a joint possession in them with his patient, or he may claim the right to keep his knowledge to himself. It is, of course, his bounden duty to withhold from the public every detail which can injuriously affect his client, and, indeed, to abstain from gossip and idle talk about his bodily condition or the state of his private affairs. But we greatly doubt whether, as long as human nature remains what it is, this high standard of professional purity can always be rigidly maintained. One of the penalties of a representative position in society is the kindly interest taken by the press in the domestic details of ordinary life, and the unflinching way in which every phase of the illness of distinguished people is communicated to the world. The measles of Lady A., or the fractured rib of Lord B., become matters of absorbing interest to many sympathetic souls; and coming down into lower strata of society, we know how anxious we all are to know the details of our neighbour's illness. In a small village community this wish for information at last becomes well-nigh overwhelming, and if the doctor will not tell, possibly his wife may, or the servants, perhaps, let out something in a confidential moment; and so, in the end, the notification is made, but in a way least likely to do the public good, and most likely to do the patient harm. I only say this to show how difficult it is for the doctor at all times to keep the confidential relations between himself and his employer intact, and how information will leak out, in spite of his best meant endeavours. Social forces are too many for him, and he need not dread that the duty laid on him by this Bill will seriously interfere with his professional success.

To begin with, everyone else will have to do it, and those who may be induced by the stress of competition, or the *res angusta domi*, or by simple want of firmness, to join their patients in a conspiracy for the suppression of the truth, will surely get into trouble in the end, and pay the penalty of taking the crooked path. The doctor can always point out to his patient that the information which he gives is of the most strictly confidential kind; that it can never pass beyond the office of the official who takes charge of these matters; and that the duty of the medical officer of health simply is to see for himself, or to be satisfied by others, that sufficient means of isolation are being used, and that there is little chance of the spread of infection. If the patient desires it, he can be removed to hospital, and his business carried on without let or hindrance, and if in the opinion of the sanitary authority the means taken for subsequent disinfection are not sufficient, he can order the necessary painting and papering and fumigation to be undertaken at the public expense. All this would seem to be rather an advantage than otherwise to poor people, and if they suffer in their trade from the invasion of small-pox or scarlet fever, that has nothing to do with the dual system, but depends on the semi-publicity which may follow notification of any kind. Sir Walter Foster tried to win the sympathies of the House of Commons by narrating the hard fate of a small shop-keeper who had been ruined by the unlucky occurrence of a case of infectious disease in his family. We must all feel for such a misfortune; but the only logical outcome of my friend's argument is that no action should have been taken in the matter, and that sugar and measles or scarlet fever should have been dealt out promiscuously over the counter to an unsuspecting public, and that an epidemic should have been allowed to start on its destructive career unchecked, to suit the convenience of one man.

I am not prepared to admit that the rigidly official machinery of notification which I have just described really constitutes a breach of confidence between doctor and patient, and I would go further and point out that, in addition to the exosmosis of gossiping fact which dribbles through feeble natures, the professional attendant is often formally compelled to disclose secrets of a compromising or even ruinous kind. I am not now referring to inconvenient details of sanitary negligence which may have to be communicated to the authorities, and the absolutely binding necessity which orders that a

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correct certificate of the cause of every death must be sent to the registrar before a certain fixed date. I can found my argument better on the evidence which medical men are forced to give before law courts, and which may go so far as to send to the scaffold a patient whose trusted adviser he may have been for many years. Here is a case beyond all others, where a doctor, like a priest, might shelter himself behind the protection of privilege. But, so far as I know, no such claim has ever been made, and information and evidence obtained under the most secret relations of professional intercourse have to be freely and publicly given up under the necessity of an oath.

It therefore turns out that the confidential tie is often broken by the tittle tattle of scandalmongers, and by the pressure of the law; but granted for the sake of argument that there is a grievance in placing this additional burden on the doctor's broad shoulders, I would then take higher ground, and say that the prevention of disease and the safety of the public ought to be our first care and our highest responsibility, and that trifling matters of convenience must give way to the general welfare. And I feel convinced that in the end this view will prevail, and that medical men and those by whom they are employed will co-operate to stamp out infectious disease, and to spare themselves and their friends from much sickness and suffering which might well be avoided under a more complete system of sanitary organization. That this opinion, however, is far from universally adopted is shown by the arguments of those who say, that if dual notification becomes law, doctors will not be called in, and concealment will be worse than ever. This has always seemed to me to prove a great deal too much. It is a two-edged weapon which cuts more deeply those who use it than those against whom it is used, and shows a state of matters which supplies the strongest reasons for the Bill. For if the desire for concealment is so great that parents will endanger the health of their children, and if valuable lives must pass through the subtle dangers of acute illness without professional aid, because some interested person is afraid of the consequences of so-called exposure, then the case becomes very grave. and the public require all the protection they can get. And when they reflect that the policy of the opposition is to place the duty of notification on the shoulders of the very people whose self-interest it too often plainly is to hush matters up, we can hardly be surprised if they welcome the additional security which is given by the added certificate of a doctor. The sole object of this Bill is to secure some regulated system of early isolation of the infectious sick, and to secure the public against the selfishness of certain interested persons whose motives for concealment are undoubtedly strong. A shop-keeper or lodging-house proprietor or a hotel manager may very naturally dread any knowledge of the fact that one of the exanthemata has paid them a visit, and although this may persuade them in some cases to dispense with a doctor, the instinct of self-preservation must pull the other way, and the security of professional attendance will be obtained; and in that case the public will, I feel convinced, appreciate the fact that their welfare has now a double guarantee, and that the medical man will be at hand to stimulate the flagging conscience of his employer, and to act independently, if need be, against the forces of obstruction and mystery.

The opponents of the Bill are never weary of telling us that in those towns where the dual system is in operation, the percentage of infectious disease is higher than in those which have been content with the single modification of the plan, and from this they argue that the intervention of the doctor aggravates the concealment which they recognize to exist under all systems. Assuming the accuracy of this statement, I am quite unable to see the necessary relationship between the effect and the assumed cause, and must only infer that other reasons must be evolved out of the complicated network of causes surrounding an epidemic outbreak, to account for its occurrence in one town rather than another. Why a householder should feel encouraged in his wish for secrecy by the presence of a doctor at his elbow, who shares the responsibility of notification with him, and why two people, independently bound by law to do a certain thing, should succeed in not doing it more effectually than one law-breaker acting on his own account, I confess myself quite unable to understand, and little help in the line of intelligent comprehension can be drawn from the writings of those who champion the failing cause of the single system.

Prof. Corfield, on the other hand, comes to our assistance in the most practical way, and throwing overboard the tons of misty theory which obscure the subject with their nebulous haze, he deals out to us an ounce or two of solid and satisfying fact. Space will not allow me to quote very largely from his two excellent letters in the *Times*, but briefly he tells us in the first place, that whenever the dual system has been thoroughly worked, the number of notified infectious cases at once begins to rise; and, coming to particulars, he quotes the evidence from Aberdeen, where the medical officer alone certifies, and where "the number of cases reported was twice as many when notification was compulsory as when it was voluntary." From Birkenhead, where the medical officer writes, "the extraordinary allegation that compulsory notification in places where it exists has increased the mortality from disease requiring to be notified is certainly not borne out by facts in Birkenhead; the mortality from diseases requiring to be notified has, since compulsory notification came into force in the borough, so much decreased that it has been less than half the average of the corresponding mortality of recent years"; and from Edinburgh, where an enormous increase in the number of cases followed compulsory notification by the family doctors, where concealment was apparently unknown, and where the system worked with comfortable smoothness. Some little amount of plausibility must be allowed to attach to the objection sometimes taken that medical men who make an error in diagnosis, and inconvenience their patients thereby, may have to pay some legal penalty for their mistake. It is stated that actions have been brought against them under these circumstances, but in reply I may urge, (1) that I have seen no authentic record of the facts of these cases; (2) that a practitioner would not be likely to order the removal of a patient to an infectious hospital, or do anything to interfere with his business, unless the diagnosis were clear, and confirmed, if necessary, by a second opinion; (3) that it is barely credible that any judge would convict in a case where the doctor acted in *bona fides*, and with reasonable skill; and (4) the facilities for the study of infectious complaints have been so much increased of late, that early diagnosis will become

Medical system of notification.

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safe and certain, and the public will get the benefit which swift detection and notification confer. But, after all, the real decision in this controversy cannot be arrived at unless we take into account the evidence drawn from practical experience and the working of the plan where it has been tried. If it is really true that the medical profession as a body are opposed to dual notification, failure must necessarily follow attempts to force it upon them, and a short trial will be enough to show the hopelessness of the attempt. Now I am not prepared to deny that a large number of doctors take an opposite view on this question to my own, and that resolutions and majorities without end are constantly appearing in the medical papers in confirmation of these opinions. Is not this enough to settle the question, why try the up-hill task of forcing an honourable and powerful profession to go counter to its settled convictions, and to pass laws which can only end by becoming more honoured in the breach than the observance. But stop a moment before you run away with the notion that the verdict must now go against the supporters of the Bill. What say the towns who have tried the plan and are now working it, and the medical men who have to carry out the responsible duty of notification. It so happens that I am in a position to give some facts bearing upon this, for during the last three years I have had the honour of a seat on the Police and Sanitary Committee of the House of Commons which was appointed to consider this class of questions.

This period of inquiry embraces many large towns in England and Wales, some of which were applying for powers to insert the notification clauses, and others who had them already were desiring Parliamentary sanction for extension of boroughs, or for various sanitary improvements. And we found, in the first place, that, with one single exception, no opposition ever came from the doctors or other citizens of any locality to the proposal to adopt the dual notification; and, in the second, that wherever the system was in force, it worked smoothly and harmoniously, and without a trace of friction. And, furthermore, we also found, on cross-examination, that even where medical opposition had run high before the clause was introduced, practical experience disarmed all dissent, and success was admitted on all hands. The number of towns where notification, according to the machinery of the Bill, is now practised now amounts, I think, to nearly 56, and not one of them, so far as I know, has tried to get back to the old status of notification, or to overturn the new arrangements. So it all amounts to this—that some of those doctors who have no practical knowledge of dual notification oppose it on purely theoretical grounds, whilst those who know from actual experience about its working become its enthusiastic champions. I have already mentioned the case of Edinburgh, and, in conclusion, I feel that nothing can equal the convincing force of the actual details of an experiment carried out on the largest scale and in the most efficient way by a very competent authority. If hostile critics and medical sceptics could only be persuaded to study Dr. Littlejohn's paper, read before the Social Science Congress at Nottingham, in 1882, they must, at all events, in the future change their lines of attack. Edinburgh has long had an unenviable notoriety for outbreaks of epidemic disease, and Dr. Littlejohn came to the conclusion, after many years of experience, that the only hope of improvement lay in early information communicated, not by the "bewildered householder," but by the medical attendant. The parochial doctors loyally promised their support, and, notwithstanding the passive opposition of the great professional colleges, the corporation took the matter vigorously in hand, and the Bill became law in 1879. What has been the result? The infectious clause has been loyally obeyed by the profession, and no complaints have reached the authorities from the powerful medical school, or press, or even from the general body of practitioners themselves. Lodging-house keepers and hotel proprietors are thankful to be relieved of responsibility, schools have gratefully acknowledged the benefits of the new arrangement, and the authorities the being able to determine every morning the state of the public health as regards infectious disease, and to track out satisfactorily the nature of mysterious outbreaks of some of them. In fact, so deeply convinced is the Common Council of the value of the clause, that rather than lose its advantages they would willingly raise the fee from 2s. 6d. to 5s.

Surely after such a record of practical experience as this, we are right in demanding something substantial in the way of fact from the other side before meeting them on equal terms on the field of controversy. With all my cordial approval of the Bill, however, it possesses one cardinal defect which cannot fail to interfere with its usefulness. It is merely permissive as regards everywhere but London. Now, I am a great believer in "that blessed word compulsion," and would like to have seen the principle boldly adopted here; but I fancy that Parliamentary forces were too strong, and that some kind of compromise was necessary to disarm opposition. And considering how ready localities have been to adopt notification clauses, even at the expense and trouble of a Parliamentary inquiry, I have little doubt that the power to pass them locally will be widely used. And of this I feel thoroughly convinced, that time will show how empty and baseless have been all the predictions of inconvenience and disaster which have been so freely made, and that history will repeat itself once more by adding another to the long list of false prophecies which have impeded for a time the progress of every important national movement.

Bill should be compulsory throughout the country.

THE BRITISH MEDICAL ASSOCIATION is to hold its annual meeting of 1890 at Birmingham, during the week beginning Monday, July 28.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—The Society of Medical Officers of Health entertained at dinner at the Holborn Restaurant, on November 7, Mr. Shirley Murphy and Dr. Edward Seaton on their retirement from the office of honorary secretaries. Some thirty members of the society were present, and during the evening testimonials were presented to the late honorary secretaries as marks of appreciation of the valuable services rendered by them to the society, and of the personal esteem in which they are held by its members.

THE treatment of night-soil has been always a difficulty. In Newcastle, N.S.W., a system is under trial which claims to be a success. Two cells built of fire brick contain a reverberatory oven and fire-place. The soil is introduced through shoots. The fumes are conducted into a chamber, where they undergo condensation and are treated with sprays of steam and water; they are again subjected to more water, finally escaping thoroughly purified through a high smoke stack. The experiments made have resulted successfully, the only question being what number of cells and furnaces, not to say tons of coal, would be required to treat the night-soil of an ordinary city.

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COMPULSORY NOTIFICATION OF INFECTIOUS DISEASES.

We append a list of local sanitary authorities that have already adopted the Act which was passed during the last session of Parliament for the compulsory notification of infectious diseases. The list, which does not, however, profess to be absolutely complete, is a long one, and includes some of the most populous and important districts in the kingdom. Some eighty authorities have already, within three months from the passing of the Act, availed themselves of its optional powers, and have thus *voluntarily* brought an aggregate population of nearly two millions under a system of compulsory notification of infectious diseases. If to this total be added the population of the fifty-nine towns that have previously acquired similar powers under separate local Acts or provisional orders, and the population of London, where the Act came into force on October 31, upwards of ten millions of persons, or more than a third of the entire population of England and Wales, will within a few weeks be under the compulsory system. This is very satisfactory, and augurs well for the future protection of the public health. It is a complete answer to those who have from time to time opposed the establishment of a general system of compulsory notification, and indicates a very general desire amongst sanitary authorities, rural as well as urban, for such compulsory powers. It is to be hoped that those authorities which have adopted the recent Act will, if they have not already done so, complete the sanitary defences of their districts by making adequate provision for the isolation of cases of infectious sickness which cannot properly be treated in their own homes without danger to their neighbours, and will also provide for disinfecting infected bedding and clothing.

Name of Authority.	Population (1881).	Date on which Act comes into force.
Urban Authorities:—		
Balsall Heath	22,497	Nov. 14, 1889
Bedford	19,500	Jan. 1, 1890.
Bishop Stortford ...	6,704	Nov. 23, 1889.
Castleford	10,530	Jan. 1, 1890.
Chatham	26,424	Dec. 3, 1889.
Cockermouth	5,300	Nov. 30, 1889.
Dalton	13,339	Dec. 2, 1889.
Devonport	48,989	Nov. 20, 1889.
Dorking...	6,328	Dec. 1, 1889.
Dover	30,270	Jan. 1, 1890.
East Retford	9,748	Jan. 1, 1890.
Egremont	5,976	Jan. 1, 1890.
Epsom	6,916	Nov. 11, 1889.
Eston	6,282	Dec. 1, 1889.
Falmouth (Pariah) ...	6,158	Dec. 4, 1889.
Gillingham	20,700	Dec. 16, 1889.
Harrow	5,558	Dec. 1, 1889.
Herne Bay	3,000	Dec. 1, 1889.
Hexham	5,919	Jan. 1, 1890.
Horncastle	4,800	Dec. 8, 1889.
Kidderminster	24,270	Dec. 2, 1889.
Melksham	2,178	Dec. 2, 1889.
Middlesbro'	55,934	Nov. 16, 1889.
Milton - next - Sittingbourne	4,219	Jan. 1, 1890.
Mountain Ash	10,295	Dec. 5, 1889.
Newark...	14,018	Dec. 7, 1889.
Plymouth	73,794	Nov. 12, 1889.
Richmond (Surrey) ...	19,066	Nov. 27, 1889.
Rochester	21,307	Nov. 20, 1889.
St. Helens (Lancs.) ...	57,403	Nov. 11, 1889.
Sheffield	284,508	Nov. 18, 1889.
Sittingbourne	7,856	Dec. 9, 1889.
Swinton & Pendlebury	18,107	Dec. 3, 1889.
Truro	10,619	Nov. 11, 1889.
Tunbridge Wells ...	24,308	Nov. 11, 1889.
Tynemouth	44,118	Dec. 1, 1889.
Wallasey	21,192	Dec. 2, 1889.
Waterloo-with-Seaforth	9,118	Dec. 1, 1889.
West Hartlepool ...	29,000	Dec. 1, 1889.
Wimbledon	15,950	Dec. 1, 1889.
Wolverhampton ...	75,766	Dec. 1, 1889.
Rural Authorities:—		
Abingdon	13,550	Jan. 1, 1890.
Aston	17,962	Dec. 1, 1889.
Bedford...	23,400	Jan. 1, 1890.
Billesdon	10,073	Dec. 1, 1889.
Blandford	10,049	Dec. 4, 1889.
Bolton	24,679	Dec. 4, 1889.
Caistor	21,219	Dec. 1, 1889.
Carnarvon	33,739	Jan. 1, 1890.
Cockermouth	26,782	Nov. 30, 1889.
Elham	9,218	Dec. 9, 1889.
Epsom	34,191	Dec. 1, 1889
Faringdon	13,676	Dec. 2, 1889.
Germans, St.	16,730	Nov. 28, 1889.
Guiltcross	10,563	Dec. 1, 1889.
Hendon...	10,987	Dec. 9, 1889.
Hollingbourn	14,000	Dec. 5, 1889.
Horncastle	16,700	Dec. 1, 1889.
Isle of Thanet	7,786	Jan. 1, 1890.
Isle of Wight	28,008	Jan. 1, 1890.
Kettering	14,558	Dec. 1, 1889.
Kingsbridge	16,934	Jan. 1, 1890.
Maldon	18,344	Jan. 1, 1890.
Martley	14,592	Jan. 1, 1890.
Milton	11,195	Dec. 9, 1889.
Northwich	18,380	Dec. 1, 1889.
Oakham	10,978	Dec. 1, 1889.
Prescot...	15,698	Nov. 30, 1889.
Selby	9,769	Dec. 9, 1889.
Settle	13,800	Jan. 1, 1890.
Shardlow	33,967	Dec. 2, 1889.
Skipton	24,700	Jan. 1, 1890.
Solihull...	21,377	Dec. 5, 1889.
South Stoneham ...	27,000	Dec. 3, 1889.
Stamford	9,571	Dec. 1, 1889.
Tadcaster	23,955	Dec. 1, 1889.
Thingoe	16,386	Dec. 6, 1889.
Ulverston	19,184	Nov. 11, 1889.
Uppingham	12,024	Dec. 4, 1889.
Wetherby	16,194	Nov. 27, 1889.
Whitehaven	23,601	Dec. 1, 1889.
Total ...	1,803,433	

Five of the Inspectors engaged in the sanitary staff of Kingston-upon-Hull hold the Sanitary Inspector's Certificate of the Sanitary Institute of Great Britain.

The University of Kiel has inaugurated a professorship of hygiene, and Dr. Bernard Fischer has been appointed to the chair. There now remain only two Prussian universities—those of Bonn and Königsburg—without such chairs. Dr. Fischer was one of Professor Robert Koch's pupils, and accompanied him on that memorable journey into Egypt and India which resulted in the discovery by Koch of the bacillus of Asiatic cholera. Another companion on that voyage was Dr. Gaffky, now professor of hygiene at Giessen. Other pupils of Koch occupy the same department of instruction in other universities, as Dr. Gärtner in Jena, Dr. Löffler in Greifswald, Dr. Hüppe in Wiesbaden, Dr. Becker in Leipzig, Dr. Fränkel in Berlin, and Dr. Frank in Naples. These are all members of the younger generation of instructors, and are adepts in the laboratory methods of Koch. Dr. Fischer's original work has been exerted in two directions chiefly,—one in the application of bromine to disinfection, another in the study of the phosphorescence of the sea.

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TORQUAY AS A HOLIDAY RESORT.

By Charles MacMahon, Cert. San. Inst., Sanitary Inspector, &c., Torquay.

The prime requisites for a holiday resort may be described as, first, a pretty place by the sea; second, said place to be within easy distance of the great centres of population; third, plenty of good and reasonable accommodation; and, to add a fourth, such locality to be a good centre from which a pretty and interesting neighbourhood may be visited with ease and comfort.

I would submit that Torquay fulfils all these requisites, in possibly a more perfect manner than most of our seaside towns.

It is undisputed that Torquay is a very beautiful place, with its innumerable villas nestling in delightful foliage, each commanding its own particular prospect of the charming landscape or of the magnificent bay on the margin of which the town is built. The fine terraces placed at different altitudes, the well-devised roads and paths, which render easy and agreeable the ascent of the steeper hills, and the pretty pleasure grounds and places of interest, rest and recreation, dotted over a wide area, all combine to render Torquay by nature, as well as by the work of man, a singularly lovely place. From the level of the sea, up to a height of 450 feet, over an area of more than three miles long by one and a half in width, and, like Rome, resting upon seven hills, Torquay occupies a natural position of unrivalled beauty. Secondly, the town is within less than half a day's railway journey of most of our great cities, from London about five hours, Birmingham and Bristol rather less, Liverpool, Manchester, and Sheffield nine hours, &c. Excursions, allowing of a fortnight's stay, run during the summer and autumn months from the metropolis and other places; the third class return fare from the former being only nineteen shillings.

Thirdly, as to good and reasonable accommodation, I believe I am correct in saying that nowhere in England is it possible to be better housed and fed, and more economically dealt with than in Torquay, during the usual holiday season. As the winter time is really the Torquay season, on account of its great mildness and the soothing character of its climate, in the summer and autumn, good rooms to suit every class of visitor can be easily obtained in either the hotels or boarding and lodging houses, at most moderate rates.

I lay stress upon this point, because it is well-known that the majority of watering places are glutted with visitors, and princely prices are demanded and given *nolens volens*, for any accommodation at all. This over-crowding almost everywhere results in positive discomfort and probable insanitary conditions, lending to anything but that renewal of health, strength and happiness which hard-worked professional, official, and trades people seek for during their annual holiday.

Torquay is well known to possess excellent sanitary arrangements, and thus danger to health is brought down to an almost irreducible minimum. Its main drainage, water supply, and private house drainage, have all received the scrupulous attention of the local authorities, who have expended a quarter of a million upon these objects.

The fourth desideratum is that a holiday resort should be a good centre from which to visit surrounding places of interest.

It is not necessary that a holiday resort should be thoroughly self-contained, or have everything within its own borders, though I am convinced that a fortnight could be pleasantly and interestingly spent within the boundaries of Torquay. Still, in these days of quick travelling and sight seeing, it is desirable to be within reach of other pretty places. In this respect, this town is also peculiarly well placed. Teignmouth, Paignton, and Babbacombe, at the seaside, are specially enjoyable to those who have families of children, whilst numberless inland places, such as Holne Chase, Berry Pomeroy Castle, Lustleigh Cleave, the River Dart, Chudleigh Rocks, Fingle Bridge, &c., are easily accessible, and full of natural beauties and romantic associations.

Having traversed a considerable portion of the three kingdoms, I feel justified in maintaining that there is hardly any place which so completely unites all the characteristics and requirements of a holiday health resort as does Torquay. For a dozen years I have found this to be the case, and my annual holidays have been healthfully and happily spent amid its ever-lovely scenes.

Royal College of Surgeons in Ireland.—Surgeon-Major A. H. C. Dane, having passed the necessary examination, has been granted the diploma in Public Health of the College.

The Metropolitan Water Companies.—A Parliamentary return relative to the metropolitan water companies shows that the number of houses and other buildings supplied during the year 1888 was 659,249, and in 1887 729,162, being an increase of 10·6 per cent. in the four years. The water rentals in 1887 showed an increase in the total equivalent to 8·2 per cent. as compared with the year 1883. The dividends paid by the eight companies for the first and last half years respectively of the period covered by the return were as under, the first figure given being the dividend paid at the beginning of 1884, and the second that paid in March 1888:—Chelsea 7½ and 9 per cent. respectively; Grand Junction, 8½ and 9 per cent.; Lambeth, 7½ and 7½ per cent.; Southwark and Vauxhall, 8 and 9 per cent.; West Middlesex, 10¾ and 6 per cent.; East London, 7½ and 7 per cent.; Kent, 10 and 10 per cent.; and New River, £11 18s. 8d. and £11 18s. 8d. per cent. In December 1887, the estimated gross value of the total share capitals was £26,131,570, having increased during the four years by 5·6 per cent.

Newcastle Water Supply.—Mr. John Pattinson, F.I.C., public analyst, reports that he analysed a sample of the water supplied to the city by the Newcastle and Gateshead Water Company taken from a tap in Painter's Heugh, Dean Street, on July 8, and found that it contained as follows per gallon:—

Total solid matter in solution dried at 212° Fah.	16·200 grs.
Chlorine existing as chloride	0·910 grs.
Ammonia	trace
Albuminoid Ammonia	0·010 grs.
Nitrogen existing as nitrates	0·017 grs.
Oxygen absorbed in 15 minutes at 80° Fah.	0·070 grs.
Oxygen absorbed in 4 hours at 80° Fah.	0·132 grs.
Lead and other poisonous metals	none
Hardness before boiling, Dr. Clark's scale	13·6 degrees
Hardness after boiling one hour, Dr. Clark's scale	5·3 degrees
Appearance in two-foot tube	Very turbid
Smell when heated to 100° Fah.	Slightly fusty
Microscopical examination	Min. and veg. debris

This sample of water was so turbid (owing to the presence of mineral and vegetable suspended matters) as to be unfit for use without previous filtration. It had a slight fusty odour on being warmed, probably owing to the same cause. Of three other samples taken on the same day from Elswick Road, Scotswood Road, and from Burn Bank, Quayside, that from the Quayside was slightly turbid, and the others were fairly clear. The last-named three samples were free from smell.

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RATE OF MORTALITY IN HOSPITALS.

It is a very prevalent custom for the secretaries of hospitals to adduce the large number of cases treated at those institutions during the year, as a proof, not only of the great demand for, but also of the great utility of their work; and the charitable public generally accept this evidence as an encouragement to renewed efforts and increased contributions. The more thoughtful members of this charitable group, however, are beginning to ask, is there not a fallacy in this testimony? How many of these large numbers belong to the out-patient department, and what proportion of them are in a position to appeal for treatment to the provident dispensary? As these claimants, whilst testifying to the popularity of the charity, not only consume, but waste its resources. But the most striking mode of advertising adopted by young hospitals, notably by such as exercise some special mode of treatment, is the display of the low rate of mortality prevailing amongst the patients, as a proof of the triumph of that speciality. Now, without waiting to appraise any peculiarities, we are satisfied that such a test, taken alone, is untrustworthy, and likely to be misleading. The late Dr. Guy, in a paper upon "the rate of mortality prevailing in the general hospitals of London," published many years ago, urged caution and circumspection in comparing one hospital with another, whether situated in the same city or in different countries.

He declared that the rate of mortality of our general hospitals in London, for the year 1861, was 9·52 per cent., based upon the deaths occurring amongst 30,000 in-patients admitted into thirteen hospitals during the year, the lowest being 6 per cent. the highest 11·2 per cent.

"St. George's Hospital, occupying one of the best sites at the West-end of London, may be conveniently compared with the London Hospital, situated at the opposite end of London, in the midst of a population strongly contrasted in every way. Both hospitals were founded, and are supported, by voluntary subscriptions, and they are the largest general hospitals thus supported. St. George's Hospital received within the year 3,646 in-patients, the London hospital admitted 4,169; the rate of mortality at St. George's was 8·3, in the London hospital it was 8·4. . . . A comparatively small intermediate hospital (the Charing Cross Hospital) has the same rate as St. George's, namely 8·3," affording the lesson "that the size of an hospital may have at least as little influence on its mortality as its site has."

Again, St. Bartholomew's and Guy's Hospitals are both "richly endowed. The one is on the north, the other on the south side of the river; the one is in the heart of the city, the other in one of the best sites in Southwark. They are the largest hospitals in London. St. Bartholomew's admitted 5,565 patients, Guy's Hospital 4,867, in the year 1861. The rate of mortality at St. Bartholomew's was 10·7, at Guy's 9·4."

Dr. Guy here asks, "is Guy's, therefore, the healthier hospital of the two," and answers the question by a calculation in which the special wards of these two hospitals are excluded, wards occupied by patients amongst whom there may not occur a single death throughout the year, and, thus corrected, the rate of mortality rises to 11·17 for Bartholomew's and 11·25 for Guy's.

In drawing his third comparison, Dr. Guy quotes University College Hospital and King's College Hospital. "These two hospitals," he says, "are supported by voluntary contributions, they are (like the other hospitals I have been comparing) medical schools. The one is joined to other buildings, but has some advantages in site, the other is detached and more spacious. University College Hospital admitted in the year 1,286 patients, King's College Hospital 1,332 patients. The rate of mortality for University College Hospital was 11·2; for King's College Hospital, 10·7. Similarity of circumstances, and an approach to equality in number of patients, and a difference in the rate of mortality of about ½ per cent., or five in the thousand."

Now the mortality for King's College Hospital is the same as that for St. Bartholomew's, showing again the comparatively small influence of position, size, and wealth; and the same mode of correction as was employed in the case of St. Bartholomew's and Guy's Hospitals, when applied to University and King's, raises the death-rate to 11·04 and 11·54.

The learned statistician was not satisfied, however, with these responses, but, in his usual exhaustive manner, enlists into his inquiry three small general hospitals—the Royal Free, the Metropolitan Free, and the Great Northern. "These hospitals in the year 1861 admitted an aggregate of 1,481 patients, and their rate of mortality, one with another, was 6·88. The Westminster Hospital admitted in the same year 1,522 patients, or 41 more, and its rate of mortality was 9·80," a state of things explained by the author as due to "the fact that these three small hospitals have no medical schools attached to them; in other words, no pressing demand for instructive, which is another name for dangerous cases, and no connection of old attached pupils to cater for them, while Westminster Hospital has a medical school of old standing attached to it." Dr. Guy now varies his evidence, obtained by comparing one hospital, or one group of hospitals, with another, by comparing King's College Hospital, on the staff of which he served for many years, with itself; he recalls the fact that this building was until 1857 an old parish workhouse with limited space in a crowded neighbourhood, that the site of the new building was much improved, and that the space was ample, and more than half the patients occupied the new building during the last five years, and that all of them were there during the last eight months. The first complete year in the history of its 22 years is 1840, and the rate of mortality for the 10 years, the medical staff remaining practically unchanged, is represented by the following table:—

In the Old Hospital.			Half the Patients in the New Hospital.		
1840	...	7·07	1857	...	11·50
1841	...	8·36	1858	...	11·73
1842	...	8·84	1859	...	10·51
1843	...	7·78	1860	...	10·88
1844	...	7·69	1861	...	10·70

Dr. Guy says of the hospital "it *had* a reputation to make as hospital and as medical school, it *has* a good repute in both respects. . . . I see in these figures a proof that a high rate of mortality may be due to causes very different from sanitary defects in the structure, or want of skill in the medical staff of an hospital. I also see in these figures a proof that within the limits of the same capital city, and in the case of hospitals enjoying similar sanitary advantages, the rate of mortality of an hospital is mainly determined by the reputation

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of its hospital staff among the public at large and among the pupils." Yet in spite of this close reasoning and convincing demonstration conducted so long ago, we have a recent claim for superiority set up on account of a low rate of mortality found to prevail at the Temperance Hospital. We do not withhold our warm approval of the exclusion of alcohol from the hospital as an article of diet, as tending to inculcate habits of temperance in a class too prone to indulgence in excess, and we notice with satisfaction the practice of the medical staff, notwithstanding this rule, to prescribe alcohol when required as a medicine. We do not now stop to inquire how desirable may be the avoidance of alcohol in typhoid fever and certain other diseases, as generally recognized in medicine, but in the face of the above evidence we protest against the fallacy arising out of the rapid generalizations adopted in the reports of the Temperance Hospital, and dispute the glory based on a rate of mortality stated in the report of 1888 to be 5·46 per cent., and in that just issued at 6·18 for the whole period of the hospital's existence, some sixteen years. In the report for 1886 the rate of mortality was set down as 5·2 for the entire period up to that time; and so fully did this mode of reasoning appear to be relied upon that the Rev. Prebendary Barker is reported to have said, amidst loud cheers, that "they had heard that the Temperance Hospital had cured a larger percentage of patients by temperance treatment than had been done in other hospitals!"

Now how far do the statistics of the hospital bear out this tremendous privilege? Let us see. We will compare this hospital with itself, as was done by Dr. Guy in the case of King's College Hospital, and with that object will appeal to the table published in the last report. This table shows the total number of patients admitted during the whole life of the hospital as 5,390, and the deaths as 333. It also gives the number of admissions and deaths for each year, and we have calculated from those data the percentages of deaths in order to give this statement of comparative mortality for the last ten years.

1879	...	4·28	1884	...	6·65
1880	...	2·96	1885	...	5·13
1881	...	3·49	1886	...	7·05
1882	...	5·41	1887	...	8·01
1883	...	4·37	1888	...	7·75

The death-rate, 6·18, for the whole period from the opening of the Temperance Hospital approximates somewhat nearly to that for 1861 of the "three small hospitals" quoted by Dr. Guy; and the character of its progressive annual advance, with its change of residence in 1881 from ordinary dwelling houses to a modern structure, designed for the purposes of an hospital, suggest an analogy to the steps in the history of King's College Hospital. Anyhow, if the low general death-rate of the hospital indicate the success of its special treatment, how much more successful must this treatment have been in its earlier years when it was conducted under less favourable sanitary conditions than those existing since the erection of the new building. We are not, however, disposed to accept this unfavourable reading, but prefer to regard the rising rate of mortality as an index of the steady advance of the hospital in public esteem and public confidence which are leading to its doors a larger number of "dangerous cases" than it could attract during its infancy and early youth. When it has attained to its full dignity by the lapse of years it will most probably show that "the rate of mortality of an hospital is mainly determined by the reputation of its hospital staff amongst the public at large," and then a close examination into the nature of its cases, and a close comparison of the death-rate with that of other hospitals in similar conditions, may be expected to yield interesting and instructive results.

A CHAIR of hygiene and bacteriology is about to be established in the University of Königsberg. Dr. Karl Fränkel, first assistant to Professor R. Koch, of Berlin, will be called to fill it.

NATIONAL HEALTH SOCIETY.—The National Health Society has commenced its winter campaign, and lectures have already been organized, or are being arranged to be held at Putney, Brixton, Lancaster Gate, St. John's Wood, East Molesey, Chislehurst, Dartford, and other places, on "Sick Nursing," "First Aid," "Domestic Hygiene," and general subjects in connection with health. These lectures are given to rich and poor alike, and anyone desiring to obtain further particulars concerning them will please apply to the Secretary of the Society at 44, Berners Street, W.

FANS OR HOT WATER.—The entire absence of sanitary arrangements in Chinese towns and villages being well-known, it goes without saying that the laws of hygiene are utterly and entirely neglected. There is no isolation of infectious diseases, and no attention is paid to causes of death unless there is supposition of violence. According to our ideas, therefore, Chinese cities ought to be hotbeds of disease, subjected regularly to those terrible epidemics which, with us, are invariably associated with the neglect of sanitary laws. Strange to say, such is not the case. Epidemics come and go without any apparent reason, appearing, perhaps, suddenly, causing a heavy mortality for a short time, and then as suddenly disappearing again, thus affording an endless field of speculation to the foreign savant. But, speaking generally, Chinese towns enjoy an immunity from these dangerous outbreaks almost as complete as that of well-drained European communities, and the cause of this puzzling and curious phenomenon has been variously explained. The fact is all the more striking when taken in connection with the contaminated water supplies of Chinese towns, the effect of which on Europeans has been manifested over and over again in the heavy mortality which overtook them previous to the adoption of precautions enjoined by modern sanitary science. The healthiness of Chinese cities has been ingeniously attributed by some people to the universal habit of fanning, a practice which is said to keep the atmosphere in constant circulation. How far this explanation can be deemed to suffice we must leave to experts to decide, but, so far as a contaminated water supply is concerned, we believe the real secret of immunity from its evil effects to lie in the universal custom of boiling all water intended for drinking. As a matter of fact, the Chinese never drink cold water. The national beverage, which, in a true sense may be said to cheer but not inebriate, is tea, and this is always "on tap," even in the houses of the very poor. The native aversion to cold water is undoubtedly carried to extremes, and certainly induces diseases which might easily be avoided by a judicious system of outward application. In the matter of ablutions it must, however, be admitted, that the Chinese enjoy facilities which, however little they are taken advantage of, are far in advance of anything within the reach of the poorer classes of our own favoured land. Every little hamlet in China has a shop where hot water can be bought for a trifling sum at any hour of the day or night. Even in a small fishing village on a remote island in the Gulf of Pechili, where the writer spent six weeks under very unpleasant circumstances during a severe winter, this was the case, and a great convenience it proved.—*The National Review.*

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ON THE EFFECT OF TOWN LIFE ON THE GENERAL HEALTH, WITH ESPECIAL REFERENCE TO LONDON.

By J. P. WILLIAMS-FREEMAN, M.D., Lic. San. Sci., Durham.

(*Continued from page* 104.)

RETURNING now to the value of the evidence of death-rates, probably, for purposes of comparison, one of the best tests of health is the mortality of young persons, which may be stated in terms of deaths under 15 years of age to 1,000 births. The fallacy of migration is here minimised. A certain amount of moving among the more well-to-do classes at this age does, it is true, take place for educational purposes; but, generally speaking, there is not much change of locality before this age.

With a view to determine to what extent statistics do show ill-health to exist in towns in excess of that of country districts, I have examined in some detail the returns given by the Registrar-General in the well-known supplement to the forty-fifth Annual Report. In these the figures given for each of the 630 districts into which England and Wales are divided cover the whole of the ten years from 1871–80, so that large numbers are dealt with, and good average results are obtained.

I have constructed for the standard of obtainable health in the country a table from the massed figures of the "101 selected healthy districts" of the Registrar-General, viz. all districts with a recorded death-rate of less than 17 per 1,000, containing altogether just over two million inhabitants, a large enough total to form a good basis for calculation of the health that is easily to be obtained in modern England. It cannot be too much insisted on that, in all questions of comparative health, such healthy districts should be taken as a standard, and not "all England," whose average of health is so immensely lowered by the fifteen million persons living in the great towns. These districts, with the exception of Croydon, Eastbourne, Edmonton, and Weymouth, are all country districts. They are mostly situated in the South of England, as will be seen by the following table of counties containing them:—Hampshire, 17; Sussex, 14; Kent, 10; Surrey, 8; Essex, 5; Dorsetshire, 5; Berkshire, Hertfordshire, and Northumberland, 4 each; Middlesex, 3; Wiltshire and Worcestershire, 3 each; Norfolk, Gloucestershire, and Warwickshire, 2 each; Bucks, Oxon, Northants, Cambridge, Suffolk, Devon, Somerset, Hereford, Salop, Lincoln, Cheshire, York (East Riding), York (West Riding), Westmoreland, and South Wales, 1 each; and, therefore, as regards climate, they will fairly be comparable with London.

As a standard of town health I have taken that of London. It is the largest town in the world. It has an atmosphere so foul and polluted as scarcely to support vegetable life; nearly all flowers and many trees being unable to live in it, and so thick with smoke that for half the year direct sunlight rarely pierces it. In it artificial life at high pressure is developed to its highest pitch. More than a quarter of its inhabitants pass their whole working day indoors. On the other hand, it has on the whole, a good supply of food, and a fair supply of water; it, or at any rate a large portion of it, occupies a particularly healthy position on the north slope of a broad tidal river, and on gravel soil. It is admirably drained, the streets are well paved, and its sewage system is up to the average. The river makes a large open space passing through the centre of the town, though its contamination by sewage does not add to its efficiency as a "lung." London, again, contains every description of inhabitant, and it possesses no undue proportion of any one unhealthy trade, as is the case with so many other towns, but may be taken as having its fair share of all the ordinary town occupations. Finally, it is a common boast on the part of its inhabitants that it is the healthiest town in England.

In examining into the vital statistics of London, one must remember that it may be said to be not one town but a collection of towns; as India is not one country but a continent of many countries. Its chief divisions, as regards the condition and occupation of the inhabitants, differ widely; and these are only roughly represented by the registration districts into which it is somewhat arbitrarily divided. Thus Kensington, generally, may be said to be a wealthy residential district, whilst St. Giles' is a poor quarter, and more occupied by the shop-keeping and labouring class.

The London of the Registrar-General is, unfortunately, not the London of ordinary conversation. In 1881, of its 3,816,483 inhabitants, 1,049,185 were contained in districts, which are not in the ordinary sense of the word included in London at all. These districts are Fulham, Hampstead, Hackney, Wandsworth, Camberwell, Greenwich, Lewisham, and Woolwich. An inhabitant of one of these districts always describes himself as living "just out of London"; and it must be remembered that districts, which are still in parts quite rural in character, were even more distinctly so between 1871 and 1880. It will be well, therefore, to consider these districts separately, under the name "Suburban London," leaving the rest of London, which is really nearly all one large town, under the name of "Urban London." The average density of "Suburban London" only amounts to 22 persons per acre; but the average of "Urban London" is 99. And though Suburban London contains a few densely populated districts, that of St. George's, Camberwell, being the greatest, with 114 persons to the acre, it also includes more than one large rural sub-district, such as that of Eltham, which has the lowest density, viz. 1·3 persons per acre, and an area of 4,424 acres. In Urban London the minimum density is that of the sub-district of Norwood in Lambeth, which is 18 to the acre; and the greatest is found in St. Andrew's, Eastern, Holborn, a sub-district of 33 acres with the extraordinary density of 324 persons per acre.

In the centre of London is a compact area, tabulated together in the census Report as being the central area in which business premises are being substituted for dwelling-houses, and whose population is therefore undergoing diminution. It consists of the registration-districts of St. George's, Hanover Square, Westminster, Marylebone, St. Giles', Strand, Holborn, London City, Shoreditch, Whitechapel, and St. George-in-the-East. This forms another division of London whose statistics it is interesting to study separately.

Partly owing, no doubt, to the irregular distribution of the parks, which give a somewhat false value to the density of the districts in which they are placed, but partly also probably owing to the fact that distance from the circumference of the town has more to do with air pollution in London than has the

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density of the population, and partly also to many other causes, the following table showing density, corrected death-rate, and deaths under fifteen years of age to 1,000 births, does not exhibit the same marked relationship between density and death-rate as was shown by the table previously quoted.

Table showing the Registration Districts of "Urban and Suburban London," arranged in order of density, with death-rates corrected for age distribution, and also for deaths under fifteen years of age to 1,000 births, 1871–80.

Districts.	Persons per acre.	Corrected death-rate for age.	Deaths under 15 to 1,000 births.	Remarks.
URBAN LONDON:				
Westminster	226	24·34	333	
St. Giles'	202	26·25	320	
St. George's East	196	27·07	340	
Shoreditch	196	24·66	303	
Whitechapel	196	35·35	378	
Holborn	193	25·47	329	
St. Saviour's, Southwark	165	24·85	318	
Bethnal Green	164	24·28	312	
Mile End	146	22·62	285	
Stepney	126	21·97	365	No public institution in the district.
Marylebone	104	25·48	296	
Chelsea	100	23·68	320	
London City	95	29·11	375	
Strand	93	32·51	422	
St. Pancras	86	24·18	290	
St. Olave's, Southwark	85	27·93	315	
Islington	80	20·69	274	
St. George's, Hanover Square	79	24·98	311	
Kensington	74	21·36	264	
Lambeth	59	24·15	293	
Poplar	58	26·17	306	
SUBURBAN LONDON: (Uncorrected death-rates).				
Hackney	39	20·78	284	
Camberwell	33	19·11	276	
Greenwich	33	21·38	276	
Fulham	25	20·78	305	
Hampstead	17	19·96	335	Small-pox hospital. Death-rate from small-pox 5·17 per 1,000.
Wandsworth	15	18·06	270	
Woolwich	12	20·19	268	
Lewisham	6	14·94	218	

Districts of Urban London arranged in order of corrected death-rate.

Districts.	Death-rate corrected for age.	Deaths under 15 to 1,000 births.
Whitechapel	35·35	378
Strand	32·51	422
London City	29·11	375
St. Olave's, Southwark	27·93	315
St. George's East	27·07	340
St. Giles'	26·25	320
Poplar	26·17	306
Marylebone	25·48	296
Holborn	25·47	329
St. George's, Hanover Square	24·98	311
St. Saviour's, Southwark	24·85	318
Shoreditch	24·66	303
Westminster	24·34	333
Bethnal Green	24·28	312
St. Pancras	24·18	290
Lambeth	24·15	293
Chelsea	23·68	320
Mile End	22·62	285
Stepney	21·97	365
Kensington	21·36	264
Islington	20·69	274

It will be seen from the table above that the most unhealthy districts form a compact central area with the city as its centre. Whitechapel, which has poverty as well as contiguity to the centre, heads the list; but the Strand, by no means a very poor district, including as it does a good area west of Charing Cross, comes near it; then comes the city itself, and then, (with the exception of Poplar) the next seven or eight arranged very nearly in the order of their nearness to the centre.

The following table shows annual death-rate per 1,000 living corrected for age distribution, calculated for the selected healthy districts, and also for the different groups of districts, into which I have divided the London of the Registrar-General, also showing the death-rate per 1,000 living for each age period. and deaths under 15 years of age to 1,000 births 1871–80.

Districts.	Corrected Death-rate per 1,000 for all ages.	Death-rates per 1,000 living at each age period.										Deaths under 15 years of age to 1,000 births.
		0–5	5–10	10–15	15–20	20–25	25–35	35–45	45–55	55–65	65–75	75 and upwards.	
Selected healthy districts	15·45	39·45	4·22	2·81	4·04	5·31	6·93	9·62	13·01	24·27	54·94	151·90	196
Suburban London	20·42	60·06	6·15	3·51	4·61	5·99	8·13	12·27	17·47	32·21	64·06	157·39	273
Urban London	24·69	77·16	7·26	3·50	4·70	6·18	9·27	14·98	22·63	39·04	74·61	168·26	306
Central area of the Registrar-General	26·81	84·52	7·82	3·80	4·78	6·31	10·16	17·92	25·29	42·59	77·39	170·18	326
All London	23·66	72·76	7·07	3·51	4·68	6·14	9·00	14·34	21·45	37·47	72·08	165·58	300
England and Wales	21·27	63·12	6·43	3·70	5·33	7·04	8·93	12·62	17·72	31·49	64·85	161·59	275

On comparing "urban" London with the selected healthy districts, it will be seen that there is a difference of death-rate of 9·24 per 1,000 per annum. And, since the population of urban London was 2,767,298, it follows that 25,559 lives are annually sacrificed owing to the preference for a life in that town. A regular and gradual increase of death-rate for every age period is seen from the "selected

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healthy districts" up to central London, being very marked amongst the children up to 5 years of age, less so in the adolescent ages, but widening again much more rapidly from 25 years upwards through the working period of life.

Of every 1,000 babies born, 112 more die under 15 years of age in urban London than in the healthy districts, only 7 out of every 10 born reaching that age.

With regard to the causes of death in London, if one takes Dorsetshire for comparison (it has the third lowest recorded death-rate amongst the counties, and is uncontaminated by any large town population), the only causes of death out of the 26 enumerated in the returns which are more active in Dorset than in the London of the Registrar-General are, diseases of the circulatory system, childbirth, and "other causes," in all of which the excess in Dorset is very slight. Rheumatism, and distance from medical assistance, are probably responsible for the extra activity of the first two of these, the third is too vague to discuss.

Rickets and the tubercular group of diseases are, of course, well recognised as town diseases *par excellence*. The first does not appear amongst the "causes of death." but scrofula, tabes mesenterica, phthisis, and hydrocephalus, taken together, give a death-rate of 3·49 in London, as against 2·24 in Dorset, and 2·89 for the whole of England. The greatest relative excess of any cause is in the acute specific group of diseases, when the death-rate is 2·48 for the town, as against 1·01 for the county; the greatest actual excess being in phthisis and respiratory diseases, taken together, in which the London death-rate is 2·24 per 1,000 greater than that of Dorset. It is these respiratory diseases that show such marked excess in the central districts of London, causing 10·09 deaths per 1,000 in Whitechapel per annum, as against 4·87 in Dorsetshire.

To sum up the points to which I wish to draw attention by these statistics. Firstly, that in speaking of the health of London one ought to consider urban London only, and that the "selected healthy districts" should be taken as the standard of attainable health; that London has a death-rate of nearly 10 per 1,000 more than the standard; that, out of every 1,000 children born, 112 more die before reaching 15 years of age than there is any need for; that this unhealthiness is centred round the "city," and gradually diminishes with the distance from it; and that, in all probability, the cause is to be found in the pollution of the air, a cause well-nigh beyond the power of sanitarians to control. Further that, seeing more than a third of the population of London are country bred, and that, in spite of this influx of fresh blood, the death-rate is so high, and the mortality in children who are town bred is so very heavy, we are probably justified in saying that London is so unhealthy a district that the Anglo-Saxon race is incapable of becoming acclimatized to it. It can exist for 2 or 3 generations, when, if not recruited by fresh blood, it dies out.

It is impossible to ignore the social and political aspects of this state of things. The rural districts of England are being steadily emptied, while the towns are getting filled. The last census showed that 15,000,000 persons lived in the great towns, as against only 10,000,000 in the rest of England, and that the proportion of the town population to that of the country was increasing every year. Moreover, that the actual number of the inhabitants of the *rural* districts was on the decline.

When one considers that it is these rural districts that are, and must be, the breeding place of the Anglo-Saxon race (and it has yet to be shown that the race will breed true in America and Australia), that it is the pick of the youth, both physically and intelectually, that leave their native country districts and go up "to better themselves" in London, and that only the second-rate ones are left behind to supply the future generations, that we have, in fact, in rural England, an exact reversal of the natural law a survival of the unfittest by elimination of the best, it seems impossible to exaggerate the importance of the question.

Moreover, the extinction of the Londoner is not effected without an unconscious but forcible protest on his part, which is apt to be dangerous as well as expensive to the nation. Finding himself at a disadvantage in competition with the immigrant (and it is a matter of common observation that most of the best workmen are men from the country, not born and bred in London), he goes through many stages before he is finally eliminated. Irregular labour, odd jobs, sweaters dens, prostitution, subsistence on charity, agitation, "demonstrations," and riot, are only some of the struggles of the dying Londoner before he pays the debt of nature, whose laws he has had no power to obey.

THE REGISTRAR-GENERAL'S LAST QUARTERLY RETURN.

By J. Hampden Shoveller.

The quarterly return of marriages, births, and deaths in England and Wales has just been issued by the Registrar-General. The statistics relating to marriages are for the second quarter of this year, while those relating to births and deaths are for the three months ending September last. The marriage, birth, and death-rates were all below their respective averages. The mean temperature of the air during the quarter at the Royal Observatory, Greenwich, was 59°·0, and was 0°·7 below the average for the corresponding quarters of 118 years. The rainfall at Greenwich amounted to 5·60 inches, and was 1·76 below the average amount in the corresponding periods of seventy-four years. The amount of rain measured was below the average in each month of the quarter.

During the second quarter of this year the marriages of 111,372 persons were registered in England and Wales, equal to an annual rate of 15·4 per 1,000 of the population. The marriage-rate showed an increase of 1·0 upon that recorded in the corresponding quarter of 1888, and exceeded by 0·4 per 1,000 the mean rate in the second quarters of the ten years 1879–88. The lowest county marriage-rates were recorded in Rutlandshire, Hertfordshire, Huntingdonshire, and Norfolk; the highest in Durham, South Wales, Lincolnshire, Monmouthshire, and Northumberland.

The 219,805 births registered in England and Wales in the third quarter of this year corresponded to an annual rate of 30·1 per 1,000 of the population, estimated by the Registrar-General to be rather more than twenty-nine millions of persons. This rate, although showing a slight increase upon that recorded in the third quarter of 1888, was 2·2 below the mean rate in the corresponding quarters of the ten years, 1879–88. In the several counties the birth-rates in

the quarter ranged from 23·7 in Rutlandshire, 24·3 in Sussex, 25·3 in Herefordshire, and 26·5 in Surrey, to 33·8 in Durham, 34·2 in Essex, 34·6 in Northumberland, and 36·7 in Monmouthshire. The 219,805 births registered in England and Wales last quarter exceeded the deaths by 97,769; this represents the *natural* increase of the population. It appears from returns issued by the Board of Trade, that 97,830 emigrants embarked during last quarter from the various ports of the United Kingdom at which emigration offices are stationed; excluding foreigners and distributing proportionally those whose nationality was not distinguished, the emigrants of British origin were 74,530, including 52,085 English, 7,551 Scotch, and 14,894 Irish. The proportion of emigrants last quarter to a million of the respective populations of the three divisions of the United Kingdom were 1,795 from England, 1,852 from Scotland, and 3,158 from Ireland; compared with the corresponding quarters of 1887 and 1888 the proportion of emigration last quarter showed a further decline in each of the divisions of the United Kingdom.

From returns published by the Local Government Board it appears that the average number of paupers relieved on the last day of each week during the quarter ending September last was 682,228, of whom 170,072 received in-door, and 512,156 out-door relief. The proportion of the population in receipt of pauper relief showed a further decline from that recorded in the corresponding periods of the three preceding years.

The deaths of 122,036 persons were registered in England and Wales during the three months ending September last, equal to an annual rate of 16·7 per 1,000 of the estimated population. This death-rate, although 1·7 above the unprecedentedly low rate in the corresponding quarter of 1888, was 0·8 below the mean rate in the third quarters of the ten years, 1879–88. In the various counties the death-rates last quarter ranged from 11·1 in Rutlandshire, 12·2 in Herefordshire, 12·3 in Berkshire, 12·5 in Surrey, and 12·8 in Sussex, to 19·9 in the East Riding, 20·1 in Lancashire, 20·8 in Durham, and 22·1 in Northumberland. In the principal urban districts, comprising the chief towns, and containing an estimated population of more than eighteen and a half millions of persons, the rate of mortality last quarter was equal to 17·8 per 1,000; in the remaining and chiefly rural population of more than ten and a quarter millions of persons, the rate was 14·7. The urban rate was 0·8 and the rural rate 0·3 below the mean rates in the third quarters of the eight years, 1881–88. In equal numbers living the deaths were 121 in the urban to 100 in the rural population, the mean proportion in the eight preceding corresponding quarters being 124.

In the twenty-eight large English towns, including London, and having an estimated population of nine and a half millions of persons, the deaths registered in the quarter under notice corresponded to an annual rate of 18·6 per 1,000, which exceeded by 0·8 the general urban rate, but was 1·4 per 1,000 below the mean rate in these towns in the corresponding periods of the seven years, 1882–88. While the death-rate in London did not exceed 16·5 per 1,000, it averaged 20·4 in the twenty-seven provincial towns, among which it ranged from 14·2 in Derby, 14·4 in Brighton, 15·6 in Huddersfield, and 16·1 in Oldham, to 25·9 in Sunderland, 26·6 in Plymouth, 27·6 in Newcastle-upon-Tyne, and 33·0 in Preston. The rates of mortality at different ages in the twenty-eight towns showed the usual wide variations, owing principally to the differences in the sex and age distribution of the population. The death-rate among infants, measured by the proportion of deaths under one year of age to 1,000 registered births, ranged from 150 in Derby and in Huddersfield, and 161 in Brighton, to 269 in Salford, 279 in Sunderland, 326 in Leicester, and 371 in Preston. The rate of mortality among persons aged between one and sixty years did not exceed 6·5 in Leicester, and 7·1 in Norwich, while it was equal to 15·6 in Newcastle-upon-Tyne, 16·0 in Preston, and 17·8 in Plymouth. Among persons aged upwards of sixty years the death-rate ranged from 47·0 and 48·3 in Plymouth and Brighton, to 78·2 in Preston, and 81·0 in Halifax.

The 122,036 deaths registered in England and Wales during the quarter ending September last included 21,300 which were referred to the principal zymotic diseases; of these, 12,202 resulted from diarrhœa, 2,314 from whooping-cough, 2,199 from measles, 1,608 from scarlet fever, 1,595 from "fever" (including typhus, typhoid, simple and ill-defined forms of fever), 1,380 from diphtheria, and two from small-pox. These 21,300 deaths were equal to an annual rate of 2·91 per 1,000, which was slightly below the average rate in the ten preceding corresponding quarters. The zymotic death-rate in the twenty-eight towns last quarter averaged 3·96 per 1,000, and ranged from 2·13 and 2·28 in Bristol and Halifax, to 6·48 in Salford, 6·94 in Sunderland, 9·95 in Plymouth, and 12·75 in Preston. In fifty other large town districts the zymotic death-rate averaged 3·43 per 1,000, while in the remainder of England and Wales it was 2·22 per 1,000.

Diarrhœa was the most fatal zymotic disease in England and Wales during the quarter under notice. The 12,202 deaths attributed to this disease were equal to an annual rate of 1·67 per 1,000, which exceeded by 0·77 the rate that prevailed in the cold and wet summer quarter of 1888, but was slightly below the average rate in the corresponding periods of the ten years, 1879–88. In the twenty-eight large towns the death-rate from diarrhœa averaged 2·46 per 1,000, and ranged from 0·49 in Halifax, 1·00 in Huddersfield, 1·11 in Oldham, and 1·34 in Bristol, to 4·20 in Salford, 4·63 in Sunderland, 4·94 in Leicester, and 7·36 in Preston. Among the fifty other large town districts the death-rate from diarrhœa averaged 2·02 per 1,000, while in the remainder of England and Wales, after deducting these seventy-eight towns, the rate was 1·16 per 1,000. The 2,314 fatal cases of whooping-cough were equal to an annual rate of 0·32 per 1,000, and corresponded with the average rate in the ten preceding third quarters; among the twenty-eight towns the rate of mortality from this disease averaged 0·35 per 1,000, and was highest in Portsmouth, Birkenhead, Bradford, and Sunderland. The 2,199 deaths referred to measles were equal to an annual rate of 0·30 per 1,000, and slightly exceeded the average rate in the corresponding quarters of the ten preceding years. In the twenty-eight large towns the measles death-rate averaged 0·34 per 1,000, and was highest in Newcastle-upon-Tyne, Hull, Leeds, Halifax, and Preston. The 1,608 fatal cases of scarlet fever were equal to an annual rate of 0·22 per 1,000, which was as much as 0·16 below the average rate in the ten preceding corresponding quarters; the rate of mortality from this disease averaged 0·31 per 1,000 in the twenty-eight large towns, among which scarlet fever was proportionally most fatal in Huddersfield, Bolton.

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Salford, and Plymouth. The 1,595 deaths referred to different forms of "fever" (principally enteric) were equal to an annual rate of 0·22 per 1,000, which was slightly below the average rate in the corresponding period of the ten preceding years, although it considerably exceeded the very low rate recorded in the third quarter of last year. In the twenty-eight large towns the fever death-rate averaged 0·22 per 1,000, and was highest in Salford, Leeds, and Preston. The 1,380 fatal cases of diphtheria were equal to an annual rate of 0·19 per 1,000, and considerably exceeded the rate in any corresponding quarter on record; in the third quarter of the ten preceding years the average rate did not exceed 0·12 per 1,000. In London the rate of mortality from diphtheria was as high as 0·43 per 1,000, while it did not average more than 0·16 in the twenty-seven provincial towns, among which, however, this disease was fatally prevalent in Manchester, Preston, Salford, and Plymouth. The fatal cases of small-pox in England and Wales, which had been 8 and 10 in the first two quarters of the current year, declined to 2 during the three months under notice, the lowest number in any quarter on record; of these 2 deaths, one occurred in the borough of Leeds and one in the borough of West Ham. No small-pox patient under treatment during the quarter under notice in any of the Metropolitan Asylum Hospitals.

The causes of 111,837, or 91·7 per cent., of the 122,036 deaths in England and Wales last quarter were duly certified by registered medical practitioners, and 6,857, or 5·6 per cent., by coroners after inquests. The causes of the remaining 3,342, or 2·7 per cent. of the deaths, were not certified. In London the proportion of uncertified deaths did not exceed 1·0 per cent., while it was 3·0 in the remainder of England and Wales. In the twenty-seven large provincial towns the proportion of uncertified deaths averaged 2·9 per cent., and ranged from 0·5 and 0·6 in Norwich and Portsmouth, to 3·9 in Huddersfield, 4·4 in Sheffield, 6·4 in Halifax, and 6·6 in Liverpool.

Analysis of the Vital and Mortal Statistics of the Twenty-eight Great Towns, dealt with in the Registrar-General's Weekly Returns, for the Third Quarter of 1889.

Towns.	Estimated Population middle of 1889.	Births.	Deaths.	Annual Rate per 1,000 Living.			Deaths from Principal Zymotic Diseases.	Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Whooping-cough.	Fever.	Diarrhœa.	Deaths of Infants under one year of age to 1,000 Births.	Rate per cent. of Uncertified Deaths.
				Births.	Deaths.	Principal Zymotic Diseases.										
28 Towns	9,555,406	71,606	44,273	30·1	18·6	4·0	9,422	1	814	734	673	834	531	5,835	210	2·1
27 Towns	5,203,668	39,978	26,392	30·8	20·4	4·7	6,121	1	596	543	206	534	371	3,870	231	2·9
London	4,351,738	31,628	17,881	29·2	16·5	3·0	3,301	—	218	191	467	300	160	1,965	183	1·0
Brighton	121,807	727	436	24·0	14·4	2·7	83	—	13	6	3	4	8	49	161	2·8
Portsmouth	141,253	1,184	669	33·6	19·0	3·9	137	—	—	5	7	25	11	89	207	0·6
Norwich	94,510	736	424	31·3	18·0	3·6	85	—	6	—	5	1	6	67	227	0·5
Plymouth	78,225	629	519	32·3	26·6	10·0	194	—	7	116	18	11	6	36	207	1·9
Bristol	229,361	1,636	939	28·6	16·4	2·1	122	—	11	7	3	18	7	76	174	2·8
Wolverhampton	82,544	637	403	31·0	19·6	3·8	78	—	11	1	2	6	5	53	215	1·2
Birmingham	454,835	3,417	2,112	30·2	18·6	4·8	546	—	53	43	22	33	13	382	225	2·4
Leicester	150,520	1,083	698	28·9	18·6	5·5	208	—	8	2	1	5	7	185	326	1·9
Nottingham	237,812	1,603	958	27·1	16·2	3·5	206	—	6	7	1	10	24	158	215	2·2
Derby	98,529	685	349	27·9	14·2	2·9	70	—	2	6	5	1	2	54	150	1·7
Birkenhead	102,541	781	487	30·6	19·1	3·8	97	—	3	2	2	25	10	55	225	1·6
Liverpool	606,562	4,323	3,173	28·6	21·0	4·4	667	—	23	81	13	59	50	441	260	6·6
Bolton	114,670	933	576	32·7	20·2	5·0	142	—	14	19	7	16	10	76	191	1·7
Manchester	378,800	3,252	2,299	34·5	24·4	4·9	466	—	54	45	33	39	27	268	218	2·2
Salford	234,283	1,667	1,203	28·6	20·6	6·5	378	—	12	45	31	15	30	245	269	3·2
Oldham	142,405	976	573	27·5	16·1	2·4	85	—	4	15	1	25	1	39	167	2·8
Blackburn	121,275	1,028	650	34·0	21·5	4·2	126	—	3	19	4	5	7	88	213	2·9
Preston	104,194	973	857	37·5	33·0	2·8	331	—	83	5	9	18	25	191	371	1·8
Huddersfield	92,825	560	360	24·2	15·6	2·6	61	—	10	15	3	7	3	23	150	3·9
Halifax	81,080	555	390	27·5	19·3	2·3	46	—	28	2	2	1	3	10	209	6·4
Bradford	235,056	1,490	1,068	25·4	18·2	4·9	287	—	40	19	5	58	20	145	219	1·5
Leeds	357,449	2,893	1,934	32·5	21·7	5·7	511	1	78	31	2	11	52	336	242	1·8
Sheffield	327,227	2,697	1,669	33·1	20·5	4·8	388	—	16	38	11	36	12	275	230	4·4
Hull	208,017	1,709	1,110	33·0	21·4	5·5	285	—	45	2	2	32	12	192	256	2·5
Sunderland	134,193	1,201	867	35·9	25·9	6·9	232	—	28	5	4	33	7	155	279	1·6
Newcastle-on-Tyne	160,983	1,564	1,108	39·0	27·6	5·3	213	—	34	6	8	25	6	134	236	2·2
Cardiff	112,712	1,039	561	37·0	20·0	2·7	77	—	4	1	2	15	7	48	201	2·0

THE PORTLAND INDUSTRIAL DWELLINGS.—A notorious Marylebone rookery, in the neighbourhood of Conway and Grafton Courts, and adjacent to the now open burial-ground in Paddington Street, has lately been replaced by seven blocks of dwellings for occupation by the working classes. These buildings have been erected by Messrs. Wall Bros., of Kentish Town, who tendered for £13,743, from the designs and under the direction of Mr. Charles Fowler and Mr. Alfred R. Pite, architects, Mr. G. Wren acting as clerk of the works. The several blocks contain 209 rooms in all, whereof the lowest rent is fixed at 1s. 6d. per week for each room. Messrs. Berry & Sons, engineers, of Regency Square, Westminster, have fitted up a separate steam laundry, with all the necessary appliances for washing, wringing, drying, and ironing. Each block consists of four floors and a basement, and on every flight are supplied water, two water-closets, and gas. The County Council have been petitioned for authority to re-name these tenements by style of "Ossington Buildings," in tribute to the helpful interest which Lady Ossington takes in the domestic improvements of the parish. Various bands, including that of the "D" police division, play in the recreation ground; and the tender of Messrs. W. H. Lascelles & Co., of 121, Bunhill Row, for £55, has been accepted by the vestry for the erection of a band-stand, seats, &c.

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THE

SANITARY RECORD.

The Organ of the Association of Public Sanitary Inspectors of Great Britain, and of the National Association of Sanitary Inspectors.

NOVEMBER 15, 1889.

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The Editor will be glad to receive, for publication, announcements of meetings, reports of proceedings, and abstracts or originals of papers read at meetings of Medical Societies of Health, Public Analysts, and Sanitary Inspectors' Associations, &c.

Medical Officers of Health, Public Analysts, Town Clerks, Local Board Clerks, Sanitary Surveyors, and Inspectors, are requested to send Notices of Appointments and Vacancies to the Editor, care of Messrs. W. H. ALLEN & Co., 13 *Waterloo Place, S.W.*

THE SANITARY RECORD will in future be published by Messrs. W. H. ALLEN & Co., 13 Waterloo Place, S.W. All matters relating to the literary portion of the Journal, and all exchange journals, periodicals, books for review, and new inventions, should be addressed to the EDITOR at above address. All business communications relating to Advertisements, Subscriptions, &c., to be addressed to the MANAGER, at the same address.

COUNTY COUNCILS AND THE DISCONTINUED GRANTS.

AN important circular has been issued by the Local Government Board calling the attention of the county councils to the provisions of the Local Government Act, 1888, relating to the payments required to be made by county councils out of the Exchequer Contribution Account with a statement of the views of the Board as to the course to be pursued in making the substituted payments, together with an explanation of the system under which those grants have been voted and paid in former years. In the circular attention is directed to the effect of subsection 2 (c) of section 24 of the Act on the salaries of medical officers, which enacts that if the Board certify to the county council that any medical officer of health, in respect of whose salary a payment would otherwise be due from the council, has failed to send to the Board such report and returns as are for the time being required by the regulations respecting his duties, made by the Board under the Public Health Act, 1875, or any Act repealed by that Act, no payment is to be made to the local authority in respect of his salary, but a sum equal to one-half of his salary is to be forfeited to the Crown. This provision renders it essential that the county council, before making any payment in respect of the salary of a medical officer of health, should be satisfied that he has not made default in sending to the Board the report and returns in question. They will accordingly inform the county council, prior to the end of October in each year, of the cases, if any, in which they propose to certify that any medical officer of health, any part of whose salary is repayable by the council, has made default in sending to the Board the report and returns required by the regulations.

TUBERCULOUS MEAT AT BELFAST.

AFTER the judgment given in the important "meat case" recently heard at Glasgow, it might have been expected that the sale of tuberculous carcases for human food would be checked for some years to come, at all events. Unfortunately, this is not the case. Dr. Russell, of Glasgow, has encouraged and enabled his brother medical officers of health throughout the three kingdoms to adopt a higher standard than hitherto, and it is no exaggeration to say that they now do their best to prevent any part of a phthisical animal being sold as food for man. Activity in such a matter on the part of the local sanitary authority is, however, of very little service to the public, unless the authority have the support of the local Bench. At present it would appear to be altogether uncertain whether this support is given or withheld. One day we read in the papers that an application for an order to destroy meat suspected of being tuberculous has been granted, and on another day that a similar application in respect of a carcase proved to be tuberculous has failed. Indeed, it sometimes happens that at the very same Court in which the action of the sanitary authority in seizing tuberculous meat has been upheld, it is practically condemned a few days later. Proceedings during the past month at Belfast well illustrate this "glorious uncertainty of the law."

On October 11 an application was made on behalf of the Belfast Corporation, at the local police court, for an order for the destruction of two carcases of beef alleged to be infected with tuberculosis. Inspector Davy deposed that he had examined both carcases, and the disease was apparent in the lungs and liver. Mr. Calwell, V.S., deposed that the animals, previous to being slaughtered, had suffered from tuberculosis, one in a more advanced stage than the other. From what he saw in the viscera, he should say the meat was unfit for human food. Dr. Browne, R.N., J.P., testified that he had inspected the lungs and livers of the animals. Having seen the state of the viscera, he certainly would not partake of the flesh. Mr. Eaton, magistrate, said that "he was not inclined to give such a decision in this case as would have a ruinous effect on the cattle trade of the country, and would touch both the farmer and the butcher. If tuberculosis were a serious disease, like pleuro-pneumonia, the Government should make provision for the compensation of fleshers. The Bench could not order the destruction of the carcases, and must refuse the application." It is not surprising to read that on the decision being given there was considerable applause in Court from a large number of fleshers, who had attended to hear the case.

The decision thus given is inexplicable, and the grounds on which it is based still more so. That the carcases were tainted with tuberculosis was proved beyond question, and that meat thus tainted could not be perfectly wholesome or eaten without risk was in evidence, yet because the magistrate was so self-conscious as to believe that his granting an order to destroy it would have a ruinous effect on the cattle trade of the country the order was refused. No doubt the Government should make provision for the

compensation of the owners of tuberculous animals seized, as it does in the cases of animals suffering from pleuro-pneumonia, but because the Government has been neglectful of its duty in this respect it is a little unreasonable to throw any doubt upon the seriousness of such a disease as tuberculosis.

Only a few days before in Belfast, when Mr. MacCarthy was on the Bench, an application to destroy tuberculous carcases was at once granted, and the evidence of the disease being present was not more convincing. Again, just a week after Mr. Eaton's refusal of the order asked for, the Belfast Corporation applied at the Summons Court for an order to destroy two tuberculous carcases seized in the public slaughter-house, and it was granted. In this case a high price seems to have been paid for the carcases, and there was no guilty knowledge on the part of the butchers; yet the Bench seems to have had no doubt as to the decision to which they must come. They were reluctant to deal hardly with the butchers, but "the meat was unsound and unwholesome and unfit for food," and they therefore made an order for the destruction of the carcases.

The immediate outcome of such a decision as Mr. Eaton's is that it restores to the meat market a large quantity of unwholesome flesh which may do serious injury to scores of unconscious consumers. It is also obvious that it weakens the hands of the local authority in the performance of its most difficult duties. Again it is not unlikely that a decision arrived at in a town of the importance of Belfast may be taken as a precedent by magistrates in rural or small urban districts, or at least as justifying them in refusing to order the destruction of tuberculous meat.

HORSE-FLESH AS BEEF AND SAUSAGES.

SOME recent prosecutions in the police courts, Newcastle-on-Tyne, have brought to light unpleasant facts as to the traffic in knackers' horses carried on between that port and Antwerp. Three weeks ago two men, named Lowther and Miller, were charged with cruelly ill-treating horses. A police inspector and an inspector of the Royal Society for the Prevention of Cruelty to Animals, on information received, went to the cattle docks and saw two trucks come in from Carlisle loaded with horses (seven in each truck). They were in an exhausted state; some were lying groaning, and others were standing upon them. One had large wounds all over its body, and the near hind-quarter of another was completely skinned, while all the animals were more or less lame. When the accused were asked what they were going to do with the poor beasts, they said they were to be put on board the Antwerp boat; and though warned that animals in such a condition were not fit to travel, the men persisted in taking them. Another man, who was at the quay-side with a number of horses, said he shipped a lot every week to Antwerp, *where they were sold as beef.* There were 49 horses for shipment that morning. The inspector for the Royal Society for the Prevention of Cruelty to Animals said he was informed that when those poor worn-out horses arrived at Antwerp, the "first-class" ones were made into beef, the "second-class" into sausages. As to what became of the "third-class" animals there appeared to be some mystery. A Mr. Stephens, who was in Court, stated that he understood that all the horses, on arriving at Antwerp, were examined by a Government inspector, and that if found to be diseased they would be seized. The Bench fined the accused 20s. each and costs, or one month's imprisonment with hard labour, and intimated that their master should be summoned.

About ten days after the hearing of this case, a man named Whinfield was charged with torturing a horse. The same two inspectors saw the defendant on the quay near the Antwerp boat. He had 15 horses, which he was shipping, not one of which was fit to walk. Among them was a bay horse suffering from a dislocated shoulder, contracted tendons, and inflammation of the foot. The Bench inflicted a fine of £3 and costs, or a month's imprisonment, and said that if a similar case came before them they would not give the defendant the alternative of paying a fine. The solicitor who defended said that the accused had been prejudiced by a statement that the animals he exported had been sent abroad to be made into extract of beef, whereas they were used for no such purpose, as could be proved.

Thus three men employed in a decidedly insanitary business have been mulcted in small penalties. The offence charged and proved was not exposing for human food horses infirm and lame and suffering from ulcers or other disease, but cruelty only. So long as these men and their fellows in the trade conduct their traffic without being guilty of positive cruelty, there is no power to interfere with them in this country. Though we have not the least prejudice against sound horse-flesh, and believe it to be a most nutritious food, it does appear to us very undesirable that horses such as those above referred to should be sold as food for man. Whether offered as horse-beef or sausages, which is not denied, or manufactured into extract of meat, which is denied, matters very little. We sincerely trust that, however made up, it is not re-imported into this country, and port sanitary authorities will do wisely to be on their guard against its introduction into their districts.

DANISH MARGARINE LEGISLATION.—The British Consul in Copenhagen, in his last report, refers to recent legislation in Denmark regulating the manufacture and sale of margarine. In 1885 a law on the subject was passed for four years, and as the term of its duration approached, it became evident that public opinion generally was in favour of finally settling the question by absolutely prohibiting the importation or manufacture of margarine. But there was some opposition to this course, and the result was a compromise. The new law provides for the appointment of three inspectors; it defines margarine as any manufacture whatever having the appearance of butter, and which is a mixture or compound containing any fatty matter not produced from milk. Vendors of margarine are to make reports to the police and to keep a book or register of their manufacture of and dealings in the article. They must keep the article in oval barrels, with the word "margarine" marked on them, and any person making butter is prohibited from making margarine or from allowing it to be made on the same premises. Dealers in margarine must have a notice affixed in their shops in a conspicuous place, in letters at least 3 in. in length, "Margarine sold here." It is forbidden to sell margarine containing more than 50 per cent. of butter fat, and the name of the manufacturer, with the percentage of butter fat, must be printed on every oval barrel. The penalty for adulterating butter or selling margarine for butter is, for the first offence, a fine of 200 kr. to 4,000 kr., and for a second offence imprisonment, with fine, as it was found that fines alone were not sufficient to prevent the adulteration of milk.

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NOTES OF THE MONTH.

A KENTISH INFECTIOUS HOSPITAL.

The state of the infectious hospital of the Rochford Sanitary Authority reminds one of Dr. Johnson's dictum on a certain leg of mutton, which he characterized as ill fed, ill dressed, ill cooked, and ill served, in fact, altogether bad. According to a report presented to the Southend Local Board, the hospital is badly constructed, wretchedly arranged, and inefficiently staffed. The hospital is under the control of the Rochford Rural Sanitary Authority, but as there is not an infectious hospital at Southend, the Local Board use it for cases occurring in their district, for which they pay an annual rental. Recently representations were made to the Southend Local Board on the subject of management, and a sub-committee was appointed to investigate and report. The report of the Committee is distressing reading. The premises, they allege, have neither been arranged nor fitted for the purpose of a hospital, and there is no proper supervision of the premises or of the staff. The staff of attendants—three in number—is inadequate, and totally unfitted for the duties; one female being described as a "cripple," having the use of one hand and one arm only, the other female attendant being an "imbecile." The male attendant, says the Committee, "is very aged and infirm." The premises are very old and badly constructed as regards sanitary arrangements, "have a cold, bare, and dilapidated appearance, and require to be drained, ventilated, white-washed, painted, and distempered throughout. The bath-room shows damp extending some feet up the walls, and in other respects is in an insanitary condition. The small amount of furniture is of a rude and uncomfortable description, and in bad condition, and the bedding and clothing are neither sufficient nor clean." Mr. Gossett, a member of the Southend Local Board and a member of the committee that visited the hospital, stated that nobody could imagine from the report the state of affairs which actually prevailed, nothing but an inspection could disclose the deplorable condition of the poor creatures lying there stricken down with fever. In one room there were two patients suffering from typhoid fever, and in another room opposite there were two scarlet fever patients. The door of each room was wide open, and there was no other means of ventilation. The bath-room was wretchedly cold and uncomfortable, and the bath itself "was such a thing as they might expect to find on a manure or dust heap, certainly not in a respectable house, much less a hospital." Such a state of affairs is enough to make one shudder, especially when we think that some unfortunate man, woman, or child may be removed to such a place. The Southend Local Board intends to dissolve partnership with the Rochford authority in this matter, and it has agreed to lay the whole of the facts before the Local Government Board, with the result, it is to be hoped, that this hospital may be mended or ended.

LEPROSY IN ENGLAND.

Too much importance may easily be attached to the discovery that there is a leper living in Brentwood, Essex. Fortunately, leprosy is a very rare disease in England, since England took to keeping its houses and roads clean. We used to have lepers enough among us. The hospital at Ilford was for lepers, and is still known as the leper hospital. There was a leper hospital near Brentwood. The fact that "low side windows" in old churches are called leper windows is evidence of the prevalence of the disease a few centuries ago in England. It seemed, however, as though we had entirely got rid of it. People never heard of it, and therefore they concluded naturally enough that it was unknown. But there has probably never been a year in which England could not have furnished nearly a score of lepers. Though the disease has thus constantly been with us, it has failed to spread. Even the poor man suffering with it now in Brentwood seems to have contracted the disease at Robbin Island, the Cape Town leper asylum, the management of which has lately been attacked with much severity. We would urge as strongly as possible that no time should be lost in getting poor Otto removed to some hospital, where he can be properly treated, and the course of his disease constantly watched, at the same time that its spread is prevented by the most effectual precautions.

PARKS AND OPEN SPACES.

It is gratifying to note the growth of parks and open spaces in London. In the year 1869 the late Metropolitan Board had one park under its management, but the London County Council has forty-six parks and similar places for recreation and health. The work in connection with these parks and open spaces has grown so enormous that it is intended to form a separate department for the work, as in the case of the Fire Brigade. There are now some 382 persons employed in these grounds, and there is an annual expenditure of £49,000 on working account alone, and which will increase year by year. The expenditure for working account has increased from £938 in 1869 to the above-mentioned sum. The Council is pledged to the purchase and control of other places of great importance, such as Brockwell Park, &c., all of which are of the utmost necessity in view of the ever-increasing population. It is intended to have a chief clerk at a salary of £400 a year, a chief surveyor at a similar salary, and a forester and chief gardener as heads of the park department. In addition to the important economy of money this change will effect in the end, it will also greatly simplify the working of the business. Formerly a committee of fifteen members meeting fortnightly attended to the general business of parks and open spaces. Now, under the Council, London is divided into four districts, the places within which are under the special control of a district sub-committee, which reports to the full committee of thirty members for confirmation of all action taken. Individual members of the committee are brought more immediately into contact with the working staff, and it therefore becomes necessary that they should be able to go straight to the one officer who has touch of all the details of the work instead of having to apply to the heads of separate departments. The chief clerk will have to keep a general supervision over every person employed, and to see that all orders of the committee are carried out. The total acreage of parks and open spaces under the control of the Council is 2,986½ acres.

PUBLIC BATHS AND WASHHOUSES.

The Sanitary and Special Purposes Committee of the London County Council have been considering the important question of establishing public baths and

laundries in all parts of London. They have prepared a return of the existing public baths and washhouses in the county of London, which sets forth in detail the number of baths, the cost of erection and fitting, the situation of the baths, the number of bathers provided for, the average annual cost of the baths, &c., and the average annual receipts from bathers. The Committee is of opinion that it is not a question pressing most for central administration, and that it should be deferred until district councils are created. However this may be, it is a question of great importance, especially when it is seen that the Plumstead District Board has no public baths or washhouses, nor has the Strand District Board, nor a great part of the Whitechapel District Board, nor Limehouse. In some cases the vestries have been approached, but either have refused or else no practical result has been arrived at. One of the councillors brought forward a motion with the object of applying to Parliament for powers to establish public baths and laundries in all parts of London, but it did not meet with success.

THE SANITARY CONDITION OF DURHAM.

At an inquest recently held in Durham, touching the death of an old woman who was found dead in bed, several of the jurymen called the attention of the coroner to the disgraceful condition of the place where deceased resided, one or two of them remarking that it was not fit for a stable, much less for human habitation. The coroner, one juryman remarked, could not possibly conceive the nature of the place they had visited that morning. Dr. Vann, who was called in to examine the deceased, said that one-eighth of the houses in Durham were unfit for human habitation. The Coroner directed that the attention of the inspector of nuisances should be called to the place. He further instructed his officer in future to summon the inspector to give evidence in such cases, and, if he experienced any difficulty in getting him to come as inspector, to summon him on the jury. He spoke of the danger of such places existing in the city, and said that infection was very often spread in consequence. The coroner also directed that the attention of the owner should be called to the matter.

PAUPER INEBRIATES.

The Inebriates Legislation Committee of the British Medical Association, of which Dr. Norman Kerr is Chairman, has issued a third circular to about 700 Boards of Guardians on the treatment of pauper inebriates. After calling attention to the difficulty experienced by many Boards of Guardians in dealing with intemperates who enter the workhouse for the purpose of recovering from the effects of their potations, only to fall anew into their bibulous propensities, the circular states that many of these habitual inmates are the victims of a diseased condition which sets up an overmastering impulse or crave for intoxication. For such the only chance of cure is seclusion from intoxicants under proper medical treatment, securing freedom from temptation, with the adoption of every means helpful in the restoration of the lost will power. The Committee state their belief that it would be true economy to deal with such diseased paupers under compulsory reception and detention clauses to be added to the Inebriates Acts. The Committee ask Boards of Guardians for an opinion as to their investment with the power (if they choose to exercise it) of paying for the treatment of inebriate inmates, either in the workhouse or in some special institution. The second circular obtained considerably more favourable replies than the first, and a still more affirmative response is hoped for now.

CARRYING OUT THE INFECTIOUS DISEASES (NOTIFICATION) ACT.

Local authorities in making arrangements for carrying out the provisions of the Infectious Diseases (Notification) Act would do well to adopt a very excellent suggestion emanating from Dr. Edward Seaton, which has already been put in practice by the Chelsea Vestry. It is that the local authorities should supply maps of the district to the practitioners in the district. By this means they would soon become acquainted with the boundaries of parishes or districts in which their practices lie—a convenience which could be effected at small cost to the authorities.

A HOSPITAL FOR THE INSANE.

A short time ago the London County Council appointed a special committee to inquire into the advantages which would be likely to accrue from the establishment, as a complement to the existing asylum system, of a hospital, with a visiting medical staff, for the study and curative treatment of insanity. The committee have just completed their inquiries, and have received valuable and important evidence from sixteen eminent members of the medical profession, as well as from the medical superintendents of public asylums in England and Wales. The conclusion arrived at is that such a hospital would be likely materially to increase the present knowledge of the nature and causes of insanity, and therefore ultimately to increase the means available for its prevention and cure. The committee think that an adequately equipped hospital, having 100 beds, for the study and curative treatment of insanity in pauper lunatics of both sexes, should be erected in the metropolis, and that it should be under the direction and control of the Council. In addition to the ordinary medical staff, they think an ophthalmic surgeon, an aural surgeon, a laryngologist, and a gynæcologist should be appointed as honorary medical officers, and these should have held similar offices in a general hospital, and should be available as consultants whenever required by the physicians.

Typhoid Fever and Oysters.—Typhoid fever continues to be very prevalent in Dublin, chiefly among the middle and upper classes. There is a popular belief in the city that it is associated with the eating of oysters; one thing is certain, there has been a good deal of diarrhœa and sickness clearly traceable to oyster eating.

Bag for Medical Officers of Health.—Messrs. Ferris & Co., of Bristol, at the suggestion of Dr. Geary Dyer, have devised a "Bag for Medical Officers of Health," specially intended for those who have to travel long distances on their tours of inspection. It is light, compact, and portable, and contains all that is necessary for ascertaining the condition of a given sample of water, so far as all the usual impurities are concerned. Some brief directions for quantitative analysis accompanies the bag, the convenience of which will doubtless be appreciated by those for whom it is intended. The price complete is £2 2s., or with the reagents £2 5s. 6d.

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THE PUBLIC HEALTH

During October 1889.

The mean temperature during the month of October at the Royal Observatory, Greenwich, was 48°·6, and was 1°·0 below the average October temperature in one hundred years. An excess of temperature prevailed on only four days during the month, while on the remaining twenty-seven days it was below the average. The coldest day of the month was the 14th, when the mean was 44°·4, and 4°·7 below the average; the warmest day was the 16th, when the mean was 55°·7, and showed an excess of 4°·3. Rain was measured on sixteen days during the month under notice, to the aggregate amount of 3·8 inches, which exceeded that recorded in the corresponding period of any year since 1882, and was an inch above the average amount in the same month of sixty-one years. During the first ten months of the current year the rainfall has amounted to 20·9 inches, which was very slightly below the average amount in the corresponding periods of sixty-one years. The sun was above the horizon during 328·7 hours during October, and 87·4 hours of bright sunshine were recorded at Greenwich, which exceeded the average amount registered in the corresponding months of the ten preceding years. The wind was south-westerly until the middle of the month, after which easterly winds generally prevailed.

In the twenty-eight large English towns dealt with by the Registrar-General in his weekly return, which have an estimated population of upwards of nine and a half millions of persons, 28,476 births and 16,259 deaths were registered during the five weeks ending Saturday, November 2. The annual birth-rate, which had declined from 31·9 to 29·6 per 1,000 in the five preceding months, rose again to 31·1 during the month under notice, but was considerably below the average rate in the corresponding periods of the seven preceding years, 1882-88. The lowest birth-rates last month in these twenty-eight towns were 23·6 in Brighton, 26·4 in Bradford, and 26·9 in Huddersfield; in the other towns the rates ranged upwards to 36·6 in Manchester, 37·9 in Preston, 40·1 in Newcastle-upon-Tyne, and 42·2 in Cardiff. In London the birth-rate last month was equal to 30·4 per 1,000, while it averaged 31·7 in the twenty-seven provincial towns.

The annual death-rate in the twenty-eight towns, which had declined from 20·4 to 17·0 per 1,000 in the three preceding months, rose again to 17·8 during the month under notice, but was below that recorded in the corresponding period of any of the seven preceding years, 1882–88. The lowest rate of mortality in these towns was 12·6 in Cardiff; the rates in the other towns, ranged in order from the lowest, were as follow:—Derby, 13·0; Birmingham, 13·6; Leicester, 13·9; Birkenhead, 15·0; Portsmouth, 15·1; Nottingham, 15·3; Bristol, 15·7; Brighton, 16·1; London, 16·2; Salford, 16·4; Norwich, 17·0; Oldham, 17·2; Huddersfield, 17·8; Bradford, 18·1; Bolton, 18·4; Sheffield, 19·6; Liverpool, 20·3; Wolverhampton, 20·5; Leeds, 21·2; Hull, 21·8; Blackburn, 22·1; Halifax, 22·1; Manchester, 23·7; Sunderland, 24·4; Newcastle-upon-Tyne, 26·6; Plymouth, 26·7; and the highest rate during the month, 28·5 in Preston. The mean death-rate in the twenty-seven provincial towns was 19·1 per 1,000, while in London, as before stated, it did not exceed 16·2 per 1,000. The 16,259 deaths from all causes in the twenty-eight towns during the five weeks of October included 468 from diarrhœa, 377 from scarlet fever, 279 from diphtheria, 275 from "fever" (principally enteric), 254 from whooping-cough, 236 from measles, and not one from small-pox; in all, 1,889 deaths were referred to these principal zymotic diseases, equal to an annual rate of 2·0 per 1,000, which, with one exception, was below that recorded in the corresponding period of any of the seven preceding years, 1882–88. The death-rate in London last month from the principal zymotic diseases was equal to 1·7 per 1,000, while in the twenty-seven provincial towns it averaged 2·4, and ranged from 0·8 in Huddersfield, and 0·9 in Leicester and in Cardiff, to 4·5 in Preston, 4·7 in Sunderland, 5·8 in Halifax, and 7·5 in Plymouth.

Diarrhœa was the most fatal zymotic disease in the twenty-eight towns during the month under notice. The rate of mortality from this disease, which had declined from 3·26 to 1·45 per 1,000 in the three preceding months, further fell to 0·51 during October, and was considerably below the average rate in the corresponding periods of the seven preceding years, 1882–88. In London the death-rate from diarrhœa was only 0·32 per 1,000, while it averaged 0·67 in the twenty-seven provincial towns, among which this disease showed the highest proportional fatality in Salford, Newcastle-upon-Tyne, Preston, and Wolverhampton. The rate of mortality from scarlet fever, which had been 0·28 and 0·35 per 1,000 in the two preceding months, further rose to 0·41 during the month under notice, but was below the average rate in the corresponding periods of the seven preceding years, 1882–88. In London the scarlet fever death-rate was only 0·26 per 1,000, while it averaged 0·54 in the twenty-seven provincial towns, and was highest in Liverpool, Bolton, Blackburn, and Salford. The death-rate from diphtheria, which had been 0·26 and 0·30 per 1,000 in the two previous months, was again 0·30 during October, and exceeded that recorded in the corresponding period of any of the seven preceding years. In London the rate of mortality from this disease was as high as 0·45 per 1,000, while in the twenty-seven provincial towns it averaged 0·18, and was highest in Manchester and Salford. The death-rate from "fever," which had been 0·19 and 0·30 per 1,000 in the two preceding months, was again 0·30 during the month under notice, and was slightly below the average rate in the corresponding periods of the seven previous years, 1882–88. In London the "fever" death-rate was only 0·23 per 1,000, while it averaged 0·36 in the twenty-seven provincial towns, among which this disease showed the highest proportional fatality in Birkenhead and Leeds. The rate of mortality from whooping-cough, which had steadily declined from 0·69 to 0·30 per 1,000 in the six preceding months, further fell to 0·28 during October, and was slightly below the average rate in the corresponding periods of the seven preceding years. In London the death-rate from whooping-cough was 0·23 per 1,000, while it averaged 0·31 in the twenty-seven provincial towns, and was highest in Preston and Oldham. The death-rate from measles, which had fallen from 0·97 to 0·17 per 1,000 in the seven preceding months, rose again to 0·26 during the month under notice, but was below the rate recorded in the corresponding period of any of the seven preceding years, 1882–88. In London the rate of mortality from measles was 0·20 per 1,000, while it averaged 0·30 in the twenty-seven provincial towns, among which this disease showed the highest proportional fatality in Bradford, Newcastle, Preston, and Sunderland. No death resulted from small-pox during the month under notice, either in London or in any of the twenty-seven provincial towns; and no small-pox patients were under treatment at any time during October in the Metropolitan Asylum Hospitals. These hospitals contained, however, 1,437 scarlet fever patients at the end of October, against numbers increasing from 547 to 1,206 at the end of the four preceding months; there were 785 admissions during the month, against 522 and 584 in the two previous months.

The rate of infant mortality in the twenty-eight towns, measured by the proportion of deaths under one year of age to registered births, was equal to 150 per 1,000, and was below the mean rate in the corresponding periods of the seven preceding years. In London the rate of infant mortality was only 127 per 1,000, while it averaged 168 in the twenty-seven provincial towns, and ranged from 101 in Cardiff, and 103 in Derby, to 212 in Halifax, 221 in Hull, 225 in Newcastle-upon-Tyne, and 249 in Preston.

The death-rate from diseases of the respiratory organs, judged by the metropolitan returns, was below the average during October. The weekly number of deaths referred to these diseases in London averaged 274, and the annual death-rate was equal to 3·8 per 1,000.

The causes of 352 of the 16,259 deaths registered in the twenty-eight towns during the five weeks of October were not certified, either by registered medical practitioners or by coroners. These uncertified deaths were equal to 2·2 per cent. of the total deaths, against 2·1 in each of the two preceding months. In London the proportion of uncertified deaths was only 0·7 per cent., while it averaged 3·2 per cent. in the twenty-seven provincial towns. The cause of only one death was uncertified during last month in Norwich, in Nottingham, and in Cardiff; among the other towns the largest proportions of uncertified deaths were recorded in Oldham, Leicester, Halifax, Liverpool, and Huddersfield.

Among the population living in the outer ring of suburban districts around London, estimated at upwards of one and a quarter million of persons, the annual death-rate from all causes during October did not exceed 13·7 per 1,000, and was below that recorded in the corresponding period of any preceding year. During the five weeks ending November 2, 41 fatal cases of diarrhœa, 40 of diphtheria, 34 of scarlet fever, 25 of whooping-cough, 23 of "fever" (principally enteric), 21 of measles, and not one of small-pox, were recorded in the outer ring; in all, 184 deaths resulted from these principal zymotic diseases, equal to an annual rate of 1·5 per 1,000, which was below the average in the corresponding periods of the seven preceding years, 1882–88. Compared with the previous month, the fatality of measles, scarlet fever, and diphtheria showed an increase. Of the 40 deaths from diphtheria, 8 occurred in Hillingdon, 8 in Tottenham, and 5 in Walthamstow sub-districts. The 34 fatal cases of scarlet fever included 9 in West Ham, 4 in Walthamstow, and 4 in Bexley sub-districts; and 7 deaths were referred to "fever" in Hendon sub-district.

NEWINGTON VESTRY AND DUST-WOMEN.—A report presented by the clerk, Mr. L. J. Dunham, at a recent meeting of the Newington Vestry, called attention to the difficulties and increased expenditure in the disposal of house dust, which had arisen from the agitation as to the alleged sweating of the women employed in sifting it. The women had for many years been content with their position, and had recently expressed their satisfaction. The result of the agitation had been that the contractor had given up the work, and discharged all the women in his employ.

PRESENTATION TO MR. E. L. BOX.—Before the close of the exhibition, recently held at Worcester, in connection with the Congress of the Sanitary Institute, the exhibitors presented the curator, Mr. E. L. Box, with a handsome testimonial, consisting of a marble clock, with illuminated address, "as a slight mark of esteem and respect," according to the inscription. This gentleman has superintended the exhibitions of the Sanitary Institute for many years past, and we are pleased to be able to add our testimony to his kindly endeavours to facilitate the interests of all concerned, and also to note that his justly deserved popularity has received such material and spontaneous recognition.

THE EDUCATION OF PLUMBERS.—A course of instruction has been arranged for apprentice plumbers, at the Merchant Venturers' School, Bristol, between October 1 and the end of April. The course comprises subjects specified in a special syllabus prepared by the Plumbers' Company, among them being elementary geometry in its various relations to plumbers' work; the elements of descriptive geometry, with special reference to the reading of working drawings; freehand drawing, including dimensioned sketches; hydrostatics and hydraulics as far as necessary to make pupils understand the action of simple appliances; chemistry and metallurgy. Workshop practice conducted on two nights in the week. The course of instruction is assisted by demonstrations in the chemical laboratory, and will be followed by examinations, at which prizes will be awarded by the Company.

NOTIFICATION OF INFECTIOUS DISEASES

IN 46 URBAN SANITARY DISTRICTS.

THE table on page 226 contains uniform statistics relating to sickness and mortality in forty-six of the fifty-eight urban sanitary districts of England and Scotland in which the notification of infectious diseases is compulsory. The population of the towns for which we are enabled to publish complete statistics for the month of October is estimated at upwards of four millions of persons. The annual rate of mortality from all causes in these towns during the month under notice averaged 18·0 per 1,000, against rates declining from 18·4 to 17·4 in the three preceding months. This death-rate almost corresponded with the mean rate last month in twenty-eight of the largest English towns, which was 17·8 per 1,000. The rates of mortality during the month under notice were considerably below the average in Burton-on-Trent, Reading, West Ham, Cheltenham, Heywood, and Ripon; while they showed an excess in Weymouth, Guildford, Manchester, Sunderland, Burnley, Preston, Warrington, and Dewsbury. The death-rate from the eight infectious diseases dealt with in the table averaged 0·90 per 1,000, against 0·65 and 0·97 in the two preceding months. No deaths from any of these infectious diseases were registered during the month in Burton-on-Trent, Leek, Ripon, Stafford, or Weymouth; whereas they caused the highest death-rates in Dewsbury, Burnley, Manchester, Salford, Warrington, and Wakefield. Scarlet fever showed the highest proportional fatality in Blackburn, Salford, and Wakefield; diphtheria in Edinburgh, Manchester, and Salford; enteric fever in Bradford, Burnley, Manchester, Nottingham, and Birkenhead; measles in Preston, Burnley, Sunderland, and Dewsbury; whooping-cough in Oldham and Preston; and diarrhœa in Salford, Preston, and Burnley. Two deaths from puerperal fever were recorded in Sunderland. With reference to the notified cases of infectious diseases in these towns during October, it appears that the proportion of the population reported to be suffering from one or other of the eight diseases specified in the accompanying table was equal to 8·3 per 1,000, against rates steadily increasing from 4·4 to 9·0 in the four preceding months. No case of any of these diseases was reported during the month under notice in Ripon or in Stafford, and only one in Llanelly and in Weymouth; and while the proportion did not exceed 2·5 per 1,000 in Reading, Leek, Jarrow, Bury, and Cheltenham, it ranged upwards in the other towns to 11·3 in Edinburgh, 11·4 in Guildford, 15·2 in Salford, 16·2 in Wakefield, 17·0 in Barrow-in-Furness, and 20·9 in Burnley. Scarlet fever was proportionally most prevalent in Darwen, Portsmouth, Stalybridge, Barrow-in-Furness, Burnley, and Wakefield; diphtheria in Edinburgh, Wakefield, Salford, and Guildford; and enteric fever in Birkenhead, Portsmouth, Dundee, Preston, Ashton-under-Lyne, and Burnley. Three cases of puerperal fever were notified in Barrow-in-Furness, 2 in Manchester, and 2 in Sunderland.

THE Carnarvon Rural Sanitary Authority have agreed to spend £220 upon a scheme of water-supply for Penygroes.

AT a meeting of the London County Council, held on November 7, Lord Rosebery and Sir John Lubbock were re-elected Chairman and Vice-Chairman respectively, and Mr. Alderman Haggis was appointed Deputy Chairman, *vice* Mr. Firth deceased, at a salary of £1,500.

PREVENTION OF FLOODS.—The premium for the second best scheme for the prevention of floods in the borough of Taunton has been awarded, under the advice of an expert, to Mr. W. H. Radford, civil engineer, Nottingham. The scheme includes the provision of rows of flood-gates at every weir, with special flood-cuts, and river widenings and deepenings; also new iron bridge of three spans over the Tone.

Table showing Sickness and Mortality in Large Towns of England and Scotland during the Month of October 1889.

Towns.	Estimated Population middle of 1889.	Small-pox.		Scarlet Fever.		Diphtheria.		Typhus Fever.		Enteric Fever.		Cholera.		Relapsing Fever.		Puerperal Fever.		Totals of Preceding Columns.		Annual Rate per 1,000 Persons Living.		Deaths from other Zymotic Diseases.				Total Mortality from all Causes per 1,000 Persons Living.
		Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Ill-defined Fever.	Measles.	Whooping-cough.	Diarrhœa.	
Aberdeen	121,448	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Accrington	39,000	—	—	22	1	1	1	—	—	4	—	—	—	—	—	—	—	27	2	8·2	0·6	—	1	1	2	15·4
Ashton-under-Lyne	40,488	—	—	8	—	—	—	—	—	19	2	—	—	5	—	—	—	32	2	9·4	0·6	—	—	1	1	21·8
Barrow-in-Furness	50,000	—	—	57	1	2	1	—	—	10	2	—	—	—	—	3	—	72	4	17·0	0·9	—	—	—	—	16·7
Birkenhead	102,300	—	—	30	1	5	1	—	—	23	6	—	—	—	—	—	—	58	8	6·7	0·9	1	—	1	1	14·2
Blackburn	122,000	—	—	77	10	1	1	—	—	13	1	—	—	—	—	—	—	91	12	7·8	1·0	—	—	2	8	22·1
Blackpool	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bolton	114,670	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bradford	235,056	—	—	68	9	3	1	—	—	32	14	—	—	—	—	—	—	103	24	4·6	1·1	—	18	6	12	18·1
Burnley	80,000	—	—	90	4	—	—	—	—	38	4	—	—	—	—	—	1	128	9	20·9	1·5	—	15	1	17	25·9
Burton-on-Trent	47,493	—	—	11	—	7	—	—	—	2	—	—	—	—	—	—	—	20	—	5·0	—	—	—	2	2	12·4
Bury	60,359	—	—	8	—	2	1	—	—	—	—	—	—	—	—	—	—	10	1	2·2	0·2	—	—	—	7	14·3
Cheltenham	46,950	—	—	8	—	—	—	—	—	2	2	—	—	—	—	—	—	10	2	2·2	0·4	—	—	—	—	13·6
Chester	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Croydon	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Darwen	34,500	—	—	30	1	—	—	—	—	1	—	—	—	—	—	—	—	31	1	10·9	0·4	—	—	3	3	16·5
Derby	98,525	—	—	48	1	9	3	—	—	17	1	—	—	—	—	—	—	74	5	9·8	0·7	—	—	—	3	12·2
Dewsbury	33,000	—	—	—	—	—	1	—	—	10	3	—	—	—	—	—	—	10	4	3·6	1·4	15	1	4	4	27·5
Dundee	163,300	—	—	33	1	6	4	—	—	32	—	—	—	—	—	—	—	71	5	5·1	0·4	—	3	11	11	16·8
Edinburgh	266,900	—	—	146	3	49	14	1	—	60	2	—	—	—	—	—	—	256	19	11·3	0·8	5	8	9	16·1
Greenock	78,248	—	—	49	—	1	—	—	—	15	4	—	—	—	—	—	—	65	4	8·7	0·5	—	—	—	4	14·1
Guildford	13,428	—	—	—	—	11	—	—	—	2	—	—	—	—	—	—	1	13	1	11·4	0·9	—	—	—	—	23·7
Halifax	81,200	—	—	8	—	3	—	—	—	15	1	—	—	5	—	—	—	31	1	5·0	0·2	—	2	1	19·3
Hartlepool	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Heywood	25,000	—	—	4	—	3	2	—	—	—	—	—	—	—	—	1	—	8	2	3·8	0·9	—	—	—	—	13·7
Huddersfield	92,825	—	—	28	2	4	2	—	—	3	—	—	—	—	—	—	—	35	4	3·9	0·4	1	1	1	1	18·0
Jarrow	31,000	—	—	3	1	1	1	—	—	2	—	—	—	—	—	—	—	6	2	2·0	0·7	1	—	3	21·2
Kngstn.-on-Thames	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Lancaster	27,740	—	—	4	1	1	—	—	—	2	—	—	—	—	—	—	—	7	1	3·0	0·4	—	—	1	1	16·1
Leek	13,700	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	1·7	—	—	—	—	—	11·2
Leicester	150,520	—	—	96	—	9	—	—	—	16	3	—	—	—	—	—	—	121	3	8·6	0·2	—	—	1	8	14·2
Llandudno	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Llanelly	22,828	—	—	—	1	—	—	—	—	1	—	—	—	—	—	—	—	1	1	0·5	0·5	—	7	1	1	20·1
Macclesfield	37,514	—	—	9	1	—	—	—	—	5	2	—	—	—	—	1	—	14	4	3·9	1·1	—	1	1	2	19·5
Manchester	378,800	—	—	160	12	39	14	—	—	59	18	—	—	—	—	2	1	261	45	9·0	1·5	—	3	6	23	23·9
Nelson	16,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Newcastle-on-Tyne	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Norwich	94,510	—	—	3	1	12	3	—	—	21	1	—	—	—	—	—	—	36	5	4·0	0·6	—	5	2	6	17·0
Nottingham	237,812	—	—	128	2	3	1	—	—	30	11	—	—	—	—	—	—	161	14	8·8	0·8	—	8	2	8	15·3
Oldham	142,405	—	—	55	4	3	1	—	—	7	3	—	—	—	—	—	—	65	8	4·8	0·6	—	2	10	5	17·1
Portsmouth	141,254	—	—	141	4	11	3	—	—	48	8	—	—	—	—	—	—	200	15	14·8	1·1	—	—	7	3	15·4
Preston	104,194	—	—	19	—	4	1	—	—	38	2	—	—	—	—	1	—	61	4	7·6	0·5	—	13	6	13	20·4
Reading	60,654	—	—	1	1	—	—	—	—	2	—	—	—	—	—	—	—	2	1	0·5	0·2	—	—	—	2	13·4
Ripon	7,670	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	13·8
Rotherham	36,482	—	—	25	1	1	—	—	—	2	—	—	—	—	—	—	—	28	1	8·0	0·3	—	—	—	—	21·7
Salford	234,283	—	—	181	22	99	15	5	1	57	10	—	—	—	—	—	—	342	48	15·2	2·1	—	5	1	25	16·4
Stafford	20,600	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	16·0
Stalybridge	27,938	—	—	22	1	1	2	—	—	1	—	—	—	—	—	—	—	24	3	11·2	1·4	—	—	—	1	22·4
Sunderland	134,193	—	—	63	5	2	3	2	2	19	2	—	—	—	—	2	2	88	14	6·8	1·1	—	32	3	8	24·6
Torquay	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Wakefield	33,360	—	—	37	5	6	—	—	—	2	—	—	—	1	—	—	—	46	5	16·2	2·1	—	1	2	1	10·8
Warrington	48,200	—	—	34	5	—	1	—	—	4	3	—	—	—	—	—	—	38	9	8·2	1·9	—	20	5	3	27·3
West Ham	180,000	—	—	113	10	15	4	—	—	27	5	—	—	—	—	—	—	155	19	9·0	1·1	—	2	4	10	13·4
Weymouth	14,008	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	1	—	0·8	—	—	—	—	2	22·6
Wigan	53,767	—	—	11	4	1	—	—	—	11	4	—	—	—	—	1	—	24	8	5·3	1·8	—	—	—	3	18·0
Willesden	52,915	—	—	38	—	10	—	—	—	9	1	—	—	—	—	—	—	57	1	11·2	0·2	—	—	1	3	16·0
York	75,327	—	—	34	—	4	2	—	—	21	7	—	—	—	—	—	—	59	9	8·2	1·2	—	2	3	3	18·8

SPECIAL REPORTS, ABSTRACTS, &c.

YORKSHIRE BRANCH OF THE SOCIETY OF MEDICAL OFFICERS OF HEALTH.

The "Destructor" Question.

On October 30 the quarterly meeting of the members of the Yorkshire Branch of the Society of Medical Officers of Health was held at the Town Hall, Bradford. Dr. M. Wilson (Doncaster), the president of the branch, was in the chair, and there was also present Drs. North (York), Britton (Harrogate), Roberts (Keighley), Wade (Wakefield), Mason (Hull), Burman (Wath-on-Dearne), Ramsden (Saddleworth), Herbert (Whitby). Whitelegge (Wakefield), Haigh (Meltham), Walker (Golcar, Colne Valley), Hebblethwaite (Burley-in-Wharfedale), and MacLintock (Bradford), secretary.

Dr. MacLintock read a paper on

The Treatment of Ash-pit and other Refuse by Means of Fryer's Destructors, to which Jones's Cremator and Horsfall's Steam Injectors have been added.

Before the reading of the paper the members had an opportunity of visiting the destructors and the disinfecting house, where they were met by Alderman Hardaker, the chairman of the Sanitary Committee, who explained the construction of the apparatus and gave other information.

Dr. MacLintock stated in his paper that about thirteen months ago his attention was called to an alleged serious nuisance in the neighbourhood of the Hammerton Street works, and on inspection he found an offensive smell of organic matter clearly proceeding from the chimney of the destructor. He then at some length described the construction of the works and the mode adopted for consuming the refuse, which consists mainly of ash-pit contents, and, as Dr. Odling had said, it was "impossible for anyone not to be struck with the very efficient way in which the destructors do their work, having regard to the quantity and character of the refuse." As Dr. Odling had admitted, however, the burning process was not wholly unattended with a discharge from the chimney shaft of a little unconsumed vapour, which by its varying proportion and character sufficed at times to impart to the chimney products generally an objectionable smell, recognizable some distance away. The reason of these objectionable products escaping was also described. Their presence, however, had forced upon the attention of the Sanitary Committee the desirability of seeking to obtain a remedy, and with characteristic energy the chairman of the Sanitary Committee devoted himself to the task. Of all the schemes suggested for the cure of the defect, two only seemed to offer hope of success, viz., Jones's "cremator," and Horsfall's "steam injectors," and by a happy thought the two were combined. The result was a great increase in the heat of the furnace and a more rapid and effectual consumption of the refuse. The method of this operation was described, and an account of the apparatus followed. The destructors now consumed roundly about 500 loads of refuse per week, and this enormous quantity was disposed of in such a way as to be rendered quite innocuous. The temperatures at which the furnaces were kept up varied from about 700° Fah. to 1,150° Fah., a degree of about 1,000 Fah. being in his opinion best for rendering the process non-offensive. Since the alteration he had never detected any smell, although he was constantly on the alert, and no complaint had been made. He quoted in confirmation the tests of the public analyst, Mr. Rimmington.

The reading of the paper was illustrated by plans and diagrams of the working parts of the apparatus described.

A brief discussion followed, and in conclusion the President remarked that Dr. MacLintock had rendered good service in giving such valuable information upon a subject with which many of them were being brought into contact. He was sure that the experience of Bradford would prove of great value to them in their respective districts.

A vote of thanks was unanimously accorded to the Mayor for the use of the Town Hall, and to Alderman Hardaker for the attention and information he had given during the visit to the destructors.

In the absence of Dr. Cameron, the Secretary (Dr. MacLintock) proposed the following gentlemen as members of the branch:—Dr. Whitelegge, W. R. County Council, Wakefield; Dr. T. Fairclough, Mirfield; Dr. Gibson, West Vale.

THE ASSOCIATION OF PUBLIC SANITARY INSPECTORS.

The meetings of the session 1889–90 of the Association of Public Sanitary Inspectors of Great Britain opened on Saturday last at the Town Hall, Westminster, the chairman, Mr. Hugh Alexander, Chief Inspector of Shoreditch, presiding.

After the formal business was disposed of, the chairman drew attention to the fact of one inspector being appointed to the district of Malton (Yorkshire), comprising 63 parishes, at a salary of £50 per annum, less than £1 per parish. He wished this to be known. He then moved, and Mr. T. Abbott, of Kensington, seconded,

That this Association learns with regret that the Board of Guardians of the Malton district (Yorkshire), a district comprising 63 parishes, 18,000 population, and an acreage of 105,880, have appointed a person to fill the position of sanitary inspector to that population at a salary of £50 per annum; and this Association is clearly of opinion that such appointment is simply an evasion of the law, which requires the Malton Board to appoint a sanitary inspector to safeguard the public health; and desires to call the attention of the Local Government Board to this latest instance of the necessity for fixing by law a minimum salary for sanitary officers.

This was carried nem. con.

The Chairman then delivered his annual address on

The Sanitary Institute: Its Examinations and Certificate.

It will be in your recollection, that I have ventured, on previous occasions, to address you upon "The operation of Building Leases, upon the Public Health," and upon "The Anomalies of Sanitary Law, and their effect upon Sanitary Officers." Those addresses were directed specially to an exposition of conditions producing unhealthy dwellings, and defective administration of sanitary law; and I have also, from time to time, directed your attention to the examinations and certificates of the Sanitary Institute, and to their operation upon the status of sanitary inspectors. And now, gentlemen, on the present occasion, if the conditions objected to in those addresses were improved, and if in the result it were no longer possible for an owner of building land, in the pursuit of improperly augmented ground rents, to pack small and otherwise insanitary houses on his land; if sanitary law were freed from anomaly, and sanitary officers were properly protected by law in the discharge of their duties; and if the council of the Sanitary Institute had secured the confidence of this Association by a satisfactory alteration of the conditions upon which it admits candidates to its examinations; then, in full recognition of the inestimable value and beneficence of those changes, we could address ourselves this evening with a feeling of relief to the consideration of some of the details of our daily work; but we have to recognise, that in all these matters no improvement has yet been effected. With a House of Commons, and a Government favourably disposed to secure the interests of the public health, the past session has been entirely barren of legislation upon those important questions: and in the matter of the examination of candidates for the position of sanitary inspector, with a body of gentlemen of the highest eminence and the best intentions, constituting the Council of the Sanitary Institute, there has been no improvement, and the examinations of the Institute continue unsatis-

factory, and their certificates unreliable. This is very disappointing to our just expectations, and it is of so much importance, not only to us but to the interests of the public health, that I will, with your permission, address myself specially to its consideration this evening.

You will remember that in the Annual Report presented to you at our last meeting, it was related that your Council in December 1888 directed a communication to be addressed to the Council of the Sanitary Institute, requesting to be heard by deputation; in that communication we recognized the high and beneficent public purposes which constitutes the foundation upon which the Sanitary Institute had taken its stand, and we gratefully acknowledged our indebtedness as an Association for help received in early days; and we respectfully recognized the great opportunities possessed by the Institute to educate, to foster, and to spread amongst all classes of the community an enlightened estimate of the value of sanitary science. We recognized, also, that in initiating examinations, the standard of qualification could not at first be raised very high.

That being written, it was submitted that a large number of the most competent and experienced sanitary inspectors, in addition to your Council, were strongly of opinion that the time had arrived, when, in the interests of the public health, a higher standard should be insisted upon; and that an essential basis of qualification for admission to the examinations should be required in all candidates for the Institute's certificate of fitness to discharge the duties devolving upon a sanitary inspector. Consequent upon that communication, your Council by invitation waited upon the Council of the Institute on Feb. 13, when it was urged by the speakers on your behalf that no candidate should be entered for examination unless he could give proof that, by previous occupation and practical experience, he possessed a basis of qualification, fitting him to discharge the duties of a sanitary inspector. It was also submitted that examinations should be arranged in two grades. That candidates for the first grade should, as a condition of admission to the examination, be in possession of a knowledge of building construction, equal to that required to obtain a first-class elementary certificate of the Science and Art Department, and should be examined on the Institute's Syllabus as at present, and it was submitted that candidates for the second grade should have held the office of sanitary inspector for at least two years, that they should give proof of having been fairly educated, that they should be examined upon the Institute's syllabus, as at present, and, in addition, should possess a knowledge of building construction, equal to that required to obtain a first-class advanced certificate of the Science and Art Department.

Your Council were answered and assured by Mr. G. J. Symons, Registrar of the Sanitary Institute (who occupied the chair on that occasion), that the suggestions and recommendations of your Council would receive consideration, and that a written reply would be forwarded. Accordingly we were informed by letter, dated Mar. 22, that the Council had carefully considered the representations made to them, and "*as far as they found it practicable*, they would be glad to give effect to the suggestions we had made, and they hoped that the result would be a permanent improvement in the status of inspectors." It is now seven months since that letter was received, and we are not aware—repeating the words of the Annual Report—"that any effect has been given to the reasonable, the beneficent, and the immediately practicable suggestions made to the Council of the Institute, to improve the character of their examinations."

I am careful to recapitulate these facts, because they require to be better known, and they require more consideration than they have yet received; and because it is due from us, that we, who have special knowledge of how much the interests of the public health are at stake in those examinations, should examine and consider if the Sanitary Institute is therein answering to its high promise, and to ascertain if its examinations are calculated to secure or defeat the interests of the public health therein.

Before inviting you to the further consideration of the value of those examinations, I would, through you, like to remind the audience beyond these walls that the sanitary inspector is a modern institution, not yet fully understood; that he is essentially the product of the modern conception; that disease can and should be prevented by the removal of the existing causes of disorder; and that, as a public officer, he depends in an exceptional degree upon the intelligent sympathy and co-operation of the public to give effect to his work; and it may be mentioned with much satisfaction that largely by the influence of this Association exerted upon public opinion, and the aid of our great president, Sir Edwin Chadwick, the sanitary inspector is now rising into light and into increased powers of usefulness, through the mists and prejudices of a transition period—a period which has been strongly marked by abortive sanitary legislation, by legal anomalies, and by adverse influences on public boards.

The upward tendency to which I refer is clearly indicated in the report of the Royal Commission on the Housing of the Working Classes, recommending in all cases the appointment to the position of sanitary inspectors of persons acquainted with building construction; by the evidence to the same effect rendered to the Royal Commission by Sir Edwin Chadwick, our president, and by Sir Hugh Owen, and by the evidence of Mr. Cubitt Nichols, adviser of the Home Office, on Artizan's Dwellings Schemes, who said "that all inspectors ought to be acquainted with building construction, and that even disciplined men of good character, like old soldiers, are of no use, unless they have served in the Royal Engineers." These weighty recommendations and opinions are big with the promise of good things for the public health, and by the public they should be remembered; but it is for us especially to see to it, that they are not stifled nor frustrated by an examination which fails to require, as a condition of admission, a preliminary practical knowledge of building construction on the part of all candidates for its certificate of fitness to discharge the duties devolving upon a sanitary inspector. I will only cite one more witness in evidence of the development of public opinion upon the question of the proper qualification of a sanitary inspector, and then proceed to the inquiry to which I have invited you. On September 7, the following letter appeared in the *Times* from Dr. C. H. Allfrey:—

SIR,—I notice a letter from Mr. Gough, Chairman of the "Architect's Registration Acts Committee" in your issue of today, in which he advocates the institution of a qualifying examination for surveyors employed by public bodies. I am glad to learn from him that there is a prospect of legislation upon the subject. I see no more reason why the public health should be endangered by the ignorance, carelessness, and sometimes, it is to be feared, dishonesty of half-educated surveyors, than that doctors or lawyers should be allowed to practice without examination. Before seeing Mr. Gough's letter, I had already drafted a letter upon the subject, in which I advocated the institution of a special class of "sanitary experts," to occupy an intermediate position between the engineer and architect, or medical sanitarian. I would suggest that the Sanitary Institute (which has recently obtained a new charter for the purpose of amalgamation with the Parkes Museum) should take the matter in hand, educate for, and grant a qualifying diploma. The sanitary surveyor should be well versed in all the technical and practical details of sanitary engineering and construction, as well as in their theory. He should possess a sound knowledge of physical laws, and of applied chemistry. He should be competent to test practically the soundness of drains, connections, &c., and should not be above such work. At the same time, he should be of such social standing as to be above suspicion of being liable to yield to undue influence, or to be a party to jobbery of any sort. It will be a happy day for ratepayers when public bodies awake to the sense of the fact that the judicious investment of income in productive "brains," by giving liberal salaries to competent surveyors, pays better by the improvement in the public health, and costs less than an enormous expenditure of borrowed capital sunk in unremunerative "bricks and mortar."

C. H. ALLFREY,
M.D., F.R.C.S., D.P.H. (Camb.), Member of Sanitary Institute.

Whatever difference of opinion may exist with regard to this letter as a whole, the proposition will not be disputed that a sanitary surveyor should be a thoroughly practical man, that he should not be above his work, and that he should be of such social standing as to be above

suspicion of improper conduct; and to secure these results, Dr. Allfrey suggests "that the Sanitary Institute should take the matter in hand, educate for, and grant diplomas." Well, in reply to the doctor's letter and its suggestions, the following letter appeared in the *Times* of September 10, from Mr. G. J. Symons, Registrar of the Sanitary Institute:—

TO THE EDITOR OF THE "TIMES."

SIR,—You will, perhaps, allow me to state that the Sanitary Institute, both before and after its incorporation, has been doing nearly all that Dr. Allfrey suggests, and we should have done more but for the lack of adequate funds, which so often stops progress, and but for that resistance to new departures, which, although at times beneficial, is occasionally quite the reverse. However, we have done what we could, both as regards tuition and as regards examination.

In the way of tuition, we have, through the gratuitous help of several Fellows and Members of the Institute, established courses of lectures adapted to the classes who compete for our certificates. Seven sets of twelve lectures, each on sanitary practice, have been given, the admission fee for each course being merely nominal; and as these lectures have been given in the Parkes Museum, its exhibits have been available for illustration, and some of our Fellows, holding official appointments, have taken those attending the lectures out on trial visits of inspection, and thus given them practical instruction wholly without payment, either by the attendants or to the lecturers.

As regards the examinations, all that they need is to be better known; but, as the following table shows, considerable progress has been made, upwards of 700 candidates having already submitted themselves for examination.

Year.	Surveyors.		Inspectors.	
	Applied.	Passed.	Applied.	Passed.
1877	3	2	5	3
1878	11	3	10	10
1879	4	2	6	4
1880	10	6	3	2
1881	7	2	7	6
1882	6	3	15	13
1883	7	3	13	11
1884	14	7	36	27
1885	20	5	44	33
1886	19	9	105	86
1887	17	7	122	75
1888	25	8	124	77
1889 Imperfect	9	5	76	38
Total - -	152	62	566	385

I enclose for your own use copy of the Syllabus, which contains some of the recent examination papers, whence you will see how practical are the questions, and that they are drawn specially with the view of testing the sanitary knowledge of the candidates.

One fact of considerable importance may be mentioned, namely, that both in the metropolis, and in many of the cities and towns throughout the country, certain sanitary appointments are open to those holding certificates.

Your obedient servant,
G. J. SYMONS, F.R.S.,
Registrar Sanitary Institute.

Parkes Museum, 74A, Margaret Street, W.

This letter of the registrar presents to the public the case of the Sanitary Institute, and one would be glad if it were possible to receive everything that is stated in the letter with as full an assurance of satisfaction as the statement that the gentlemen who deliver the lectures to candidates for the examinations do so gratuitously; but we are denied that satisfaction, for, without information to the contrary, one would conclude that all the work referred to was done by the members of the Institute gratuitously, which is not so; as it appears from a report in the SANITARY RECORD of June 1888, of the annual meeting held at the Parkes Museum 16 May in that year, Dr. Corfield in the chair. At the meeting, Dr. Dudfield, criticising the financial business of the Institute, said, "That the statement as to examinations was unsatisfactory; in 1885, 64 candidates offered themselves, the fees paid being £173, and the expenses £138, leaving a balance to the Institute of £35; in 1887 the candidates numbered 139, an increase of 75, and 82 passed; the fees received were £285. An increase of 112, but the expenses were more than in 1885 by £103, so that the nett profit was £43 for 139 candidates, against £35 for 64. What were the expenses? Well it had been stated that after a fee to the registrar, half the remainder went to the examiners; out of what still remained, expenses for rooms, printing, &c., were defrayed, the balance being profit to the Institute. He could say no more on the subject, for the accounts in regard to the examinations appeared not to come before the Finance Committee or the Council, and there was no proper audit of them so far as he could learn. *The examiners appeared to act as a quite independent body.*" Dr. Dudfield was supported by Mr. Cassal, who complained of the general silence of members of Council, and who said, "He was well aware that had he consented to remain a silent member at the Council, and to allow those who managed the Council and the Institute to have their own way in everything without protest, he would have remained in office; a fact which he regarded as of very little importance, so far as he was personally concerned, but of great importance from the state of things which it disclosed, viz., that those who in the interest of the Institute had determined to work for reform were certain of being silenced in some way or the other." Mr. W. R. E. Coles said, "his experience of attempting reform in the Council of the Institute was precisely similar to that of Dr. Dudfield and Mr. Cassal, and he was not at all surprised that the services of those gentlemen had been dispensed with."

The facts which the report of that meeting bring out prominently, and to which I particularly direct attention, conjointly with the registrar's letter, are these:—

(1.) Reverting to the registrar's letter, it shows that 566 persons have paid 2 guineas each for the inspector's examination; 152 persons have paid 5 guineas for the surveyor's examination; the total of which fees has amounted to £1,927 18s.

(2.) That from the monies so received, the registrar obtains fees; that half of the remainder goes to the examiners; that out of what remains expenses are paid, and the balance is profit to the Institute.

(3.) That Dr. Dudfield declared the statements as to examinations to be unsatisfactory; that there was no audit; and "that the examiners act as a quite independent body."

(4.) That Mr. Cassal (so also Dr. Dudfield) complained that all their efforts to effect reforms on the Council were met by a policy of silence, and by displacement from the Council. That Mr. Cassal said, "if he had been a silent member, and allowed those who managed the Council and the Institute to have their own way without protest, he would have been retained on the Council."

(5.) Mr. Coles said his experience was precisely similar to that of Dr. Dudfield and Mr. Cassal.

I will offer no comment on these facts, other than to say that they speak loudly and suggestively as to the practical rejection of the suggestions for the improvement of the Institute's examinations, which your Council advanced under a sense of duty to the Association, and in the interests of the public health.

I have already shown to you that the vital principle of that improvement was strongly recommended by the Royal Commission on the Housing of the Working Classes; and that it was supported by the evidence and testimony of the most eminent practical men of the day, tendered to the Royal Commission; and I desire also to say that those points were strongly urged upon the consideration of the Council of the Sanitary Institute at the meeting with your Council on February 13, and to repeat, that the only answer we have yet received is to the effect, "that as far as they, the Council of the Institute, found it *practicable*, they would be glad to give effect to the Council's suggestions."

Well, gentlemen, seven months having elapsed, and

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nothing having been done to give effect to our suggestions, we are driven to consider the measure of importance which may be attached to the word "*practicable*" as it is applied to the suggestions of your Council. For that purpose, let me summarise those suggestions; in effect they are, that examinations should be arranged in two grades, and that candidates for each grade should be examined upon the Institute's Syllabus as at present.

That no candidate should be entered for the first grade unless he could give satisfactory proof of practical experience of building operations, and, in addition, be in possession of a certificate of the Science and Art Department in elementary building construction.

That candidates for the second grade should have held the position of sanitary inspector for at least two years, should be fairly e lucated, and should possess a first-class advanced certificate in building construction of the Science and Art Department.

It is somewhat difficult, from a review of this summary, to conceive a single valid objection to the adoption of those suggestions, or why the Council of the Sanitary Institute should speak of giving effect to them in a limited sense, by using the expression "*as far as practicable.*" It is true that the Registrar, Mr. Symons, has explained in the letter which I have read to you that the Institute suffers from lack of funds; and one member of the Institute has said that if they demand higher qualifications in candidates for admission. it will lessen the number of candidates for examination. Granted, and instead of an increasing revenue from a continuance of the examinations, as they are at present conducted, probably there will be, at least for a time, a reduction in revenue; but surely that circumstance will not be pleaded in bar of the suggestion of your Council, that men should only l e admitted to the examinations under proper restrictions; and yet some of the facts which can be read as an accompaniment to the statements contained in the registrar's letter would suggest that quantity rather than quality has been sought for in the examinations which have been held. With your permission, I will offer some reasons in justification of that observation. In the third paragraph of the letter we read, "as regards the examinations, all that they need is to be better known," and it is also shown by a tabulated statement that considerable progress has been made, upwards of 700 candidates having submitted themselves for examination as surveyors and inspectors. As to that table, to facilitate a comparison between those attending the examinations, I supply a re-arrangement of the figures, showing the respective number of candidates for each year:—

Inspectors—1877, 5; 1878, 10; 1879, 6; 1880, 3; 1881, 7; 1882, 15; 1883, 13; 1884, 36; 1885, 44; 1886, 105; 1887, 122; 1888, 124; 1889, 76; total, 566.

Surveyors—1877, 3; 1878, 11, 1879, 4; 1880, 10; 1881, 7; 1882, 6; 1883, 7; 1884, 14; 1885, 20; 1886, 19; 1887, 17; 1888, 25; 1889, 9; total, 152.

You may notice that the number of candidates for the surveyor's certificate has only been 152, as against 566 for the inspector's certificate; and as it is needful for a right understanding to supply some explanation of the popularity of the one as compared with the other, I venture to say it will be found in the circumstance that a few years ago it was judiciously advertised that a railway porter had passed the examination of the Sanitary Institute and obtained a certificate, certifying his fitness to fill the position of a sanitary inspector. The influence of that advertisement may be observed in the rush of 105 candidates in 1886, as against 44 in the previous year. Then as to the less popularity of the surveyor's examinations, no labouring man having received a surveyor's certificate it does not appear that any rush occurred in that examination.

As to the remark "that the examinations need to be better known," that may refer to the ease with which they may be passed; it surely cannot mean more advertisement, for they have been widely advertised, and local authorities have been requested, by circulars, to employ only men holding the certificate of the Institute; and it has been made well known by the various means which have been resorted to, that men who have failed in any vocation in life, may, if they possess a small modicum of intelligence, be easily coached and crammed sufficiently to enable them to obtain a certificate of competency to fill the position of a sanitary inspector. Let me exemplify this matter. In a journal called the *Schoolmaster*, of September 28 last, there appeared the following advice to teachers:—"Considering the crowded state of the profession, and the number who find it impossible to obtain appointments, *any outlet is a gain.* To any who wish to qualify themselves for the post of sanitary officer, the Sanitary Institute, Parkes Museum, 74A, Margaret Street, W., offers the opportunity."

In other words, if your ability as a teacher of children has not been recognised, why not go to the Sanitary Institute, they are not particular about qualifications. You may be of no use as a teacher of children, but with a little coaching and attendance on a course of lectures, you will be enabled to take the inferior position of a sanitary inspector; and if the ambition of your life is disappointed, remember, as your Mentor has put it, "that any outlet is a gain."

This is all very well for discomfited schoolmen and aspiring labourers; but I must submit that certifying men on the present examination as being fitted to be sanitary inspectors without reference to previous training in building construction is prejudicial to the interests of the public health, and a degradation of an important office and a useful body of men; and I am sure you will join with me in an expression of the utmost regret that the Sanitary Institute has fallen so far short of its high promise, and that the Report of the Royal Commission on the Housing of the Working Classes, recommending the appointment in all cases of persons practically acquainted with building construction to the position of sanitary inspector has been ignored in the Institute's examinations; and also that the expressed opinions thereon of the most eminent and practical men of the day have been disregarded and overborne. What those opinions are may be further shown by submitting, for your consideration and for the consideration of the Council of the Institute, the following extract from the last report of the medical officer of health for the great parish of Lambeth:—

> The education of public opinion upon questions relating to health has kept pace with the advances made in sanitary science. Especially are the upper and middle classes more conscious of the advantages derived from sanitary dwellings, and less patient in tolerating the existence of a nuisance, either upon their own premises or that of their neighbour. The growth of opinion is manifest in the increasing number of demands made upon the sanitary department. Formerly the aid of the inspector was seldom invoked; now every post brings with it batches of requests bearing upon the subjects of drain defects, drain testing, and drain reconstruction. Moreover, it has become a custom with parishioners, before entering upon a purchase or lease, to make an application at the office for a preliminary inspection of the premises.
>
> A mode of sanitary administration, considered efficient twenty years ago by every metropolitan vestry, would scarce meet with the approval or indeed escape the censure of the parishioner of to-day. The inspector was an unskilled workman, holding that which might almost be regarded as a sinecure office—an official recruited into the service of the vestry from the ranks of ex-sailors, ex-policemen, or army pensioners. He brought with him a character for honesty and sobriety, and his appearance was such as would admit him as a candidate where youth was a quality having weight with the committee of selection. A knowledge upon sanitary matters acquired from a course of technical training was not expected from him. No greater accomplishment than the art involved in writing a letter, or the ability displayed in reading it, was put forward as a qualification by the candidate, or regarded as a recommendation by his employers. A close application for a few weeks to the work of his district, and a few hints from his older associates in office, afforded him a sufficient fund of assurance and official mannerism to follow the routine of his duty with satisfaction to himself, his vestry, and his parish.
>
> But with the advances in sanitary science, and a more extended appreciation of sanitary principles, this view of the qualifications and duties of a sanitary inspector is no longer entertained. Builders, plumbers, and the heterogenous body of workmen engaged in connection with sanitary work, are not long in estimating at its proper worth the practical ability of the man whose instructions it is their duty to follow; nor are they slow in finding means to evade the supervision and directions of a chief whose opinions they have learned to despise. Although perhaps not

deeply versed in sanitary matters, the ratepayers and the workmen alike look for the presence among them of a man who, having a practical knowledge of his profession, can speak with authority.

Leaving this extract to speak for itself, I will now submit to you, in conclusion, that the suggestion made by your Council to the Council of the Sanitary Institute, for the improvement of their examinations, are practicable, without limitation of any kind, and well calculated, if adopted in their entirety, to remove the following list of serious objections to the examinations of the Institute as at present conducted:—

(1.) That they do not demand in candidates a proper basis of qualification for admission.

(2.) That persons whose previous vocations have had no affinity with building operations are allured with the fact that they can be easily coached and successfully crammed.

(3.) That passing the examination does not qualify for the position of sanitary inspector.

(4.) That certificates obtained under the examination are misleading and unreliable.

(5.) That persons holding the certificate, compete for, and accept positions for wages commonly paid to labouring men.

(6.) That unenlightened local authorities, regardless of the interests of the public health, in offering inadequate salaries, are excused by appointing persons holding the Institute's certificate.

(7.) That consequently the influence of the Sanitary Institute tends, not to improve the status and real efficiency of sanitary inspectors, but rather to the production of a body of underpaid, inefficient, and weak subordinates.

(8.) That thereby, and therein, sanitation is stultified, the development of sanitary science retarded, and a wrong done to the best interests of the public health.

An animated discussion ensued.

Mr. F. T. PAULSON (Chelsea) said, as an inspector, he considered that the certificate he had from the Sanitary Institute was as valuable as any he held, and that the Institute had done good work as far as it went.

Mr. T. G. DEE (St. Margaret's, Westminster) endorsed every word which their chairman had said. A knowledge of building construction should be a practical part of the examination.

Mr. RICHARDS moved a hearty vote of thanks to Mr. Alexander for his address. The inspectors might discover nuisances in houses, but had no power to act; and often their reports to the vestry were not attended to, and a nuisance which called for immediate and prompt action was often passed over for weeks, and the inspector was powerless. They ought to have authority to move in the matter.

Mr. E. TIDMAN seconded a vote of thanks.

Mr. GREEN warmly defended the Sanitary Institute.

Mr. A. A. GRIST, St. Saviour's Board of Works, and others having spoken, the motion was carried.

Mr. J. WOONTON, St. George's, E., moved

That the Association of Sanitary Inspectors regrets the continued admission to the examination of the Sanitary Institute of candidates for the position of sanitary inspectors who have not as a basis for such examination a satisfactory practical and theoretical acquaintance with building construction, as recommended to the Royal Commission on the Housing of the Working Classes, and deprecates the examination as tending not to promote the interest of the public health, nor to improve the status of sanitary inspectors, but rather to the production of a body of underpaid, inefficient officers.

This was seconded by Mr. S. FAIRCHILD, Clapham, and supported br Mr. RICHARDS.

Mr. OSBORNE and others having spoken, the resolution was carried by 15 to 11.

The Chairman, in his reply, deprecated the idea that he had any animosity to the Sanitary Institute; the object in view was to improve it, and to raise the status of the inspectors. The ratepayers looked for men of experience, and he demanded something more from the examinations of the Institute than was at present obtained.

THE ASSOCIATION OF PUBLIC SANITARY INSPECTORS OF GREAT BRITAIN.

THE sixth Report of the Public Sanitary Inspectors of Great Britain presented to the Annual General Meeting on October 5, 1889, states that the Council thanks Mr. HUGH ALEXANDER, Chairman of the Association, for his valuable address, on the "Land Laws, and the operation of Building Leases on the Public Health," and for the able and exhaustive address which he delivered in May last, to the Health Congress at Hastings, on "the Status of Sanitary Inspectors," and the Council further testified its appreciation of the value of that address by directing a copy to be forwarded to each member of the House of Commons. The Council's grateful thanks are also due to Mr. DANIEL RICHARDS, Mr. EDWARD TIDMAN, C.E., Dr. ARTHUR NEWSHOLME, Medical Officer of Health, Brighton, and to Mr. CHARLES MACMAHON, for the valuable papers contributed to the proceedings of the Association by those gentlemen. Also to Dr. MAJOR GREENWOOD, for his able and very interesting paper on the "Great Plague of London," given at very short notice in lieu of an address of which the indisposition of our President prevented the delivery.

The Council was not inattentive during the past session to the progress of legislation, as it affected Local Government and its bearing upon the public health, and the position and interests of sanitary inspectors, and were prepared to take steps, if occasion had required, to protect those interests; but finding that a District Councils' Bill could not be introduced, it was deemed inexpedient to make any move during the session. Nevertheless, at the close of the discussion following upon the delivery of your chairman's address to the Health Congress at Hastings, Earl FORTESCUE moved, and the President of the Association, Sir EDWIN CHADWICK, C.B., seconded the following resolution (which was carried unanimously):—

Resolved—

That this Health Congress desires to record its opinion, that in order to secure proper sanitary inspection, it is desirable that only properly qualified men should be appointed to the position of sanitary inspectors, and that such officers should be adequately remunerated and protected in the discharge of their duty, and not be discharged, nor their salaries diminished, without the sanction of the Local Government Board. The Congress also desires to express the opinion, that all sanitary inspectors should be required by law to inspect the district to which they are appointed, in order to detect the existence of nuisances, and in such cases to serve notices for abatement of such nuisances, which notices should be read at the next meeting of the Board or Committee appointed for such purpose, and, if approved, such notices should be valid, and proceedings taken thereon as occasion may require.

The foregoing resolution was also adopted at the Fourth Provincial Meeting held at Chelmsford, and forwarded to the President of the Local Government Board, and the following reply was received:—

LOCAL GOVERNMENT BOARD,
June 29, 1889.

Sir,—I am directed by the Local Government Board to acknowledge the receipt of your letter of the 13th inst., forwarding a copy of a resolution passed at a meeting of the Association of Public Sanitary Inspectors of Great Britain, held at Chelmsford on the 8th inst., with reference to the appointment, duties, and remuneration of sanitary inspectors.

I am directed to state that the views expressed in the resolution will receive the consideration of the Board.

I am, Sir,
Your obedient servant,
S. B. PROVIS
(*Assistant Secretary*).

H. ALEXANDER, Esq.

INFECTIOUS DISEASE NOTIFICATION ACT.

The whole influence of the Council was exerted in favour of the Compulsory Notification of Infectious Disease Bill, and the Association memorialised the Local Government Board thereon in the previous session.

As the compulsory operation of the Act is limited to the metropolis, it will be incumbent upon the Association to use every opportunity to amend the Act, so that compulsory notification may apply to the whole kingdom.

SANITARY INSTITUTE'S EXAMINATION AND CERTIFICATES.

The Council, recognizing the great necessity which exists for a proper examination of those who aspire to be

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sanitary inspectors, directed the following communication to be addressed to the Council of the Sanitary Institute thereon.

THE ASSOCIATION OF PUBLIC SANITARY INSPECTORS OF GREAT BRITAIN.

December 18, 1888.

To the Council of the Sanitary Institute.

GENTLEMEN,—We, the Council of the Association of Public Sanitary Inspectors of Great Britain, beg most respectfully to represent to your Hon. Board that we are deeply sensible of the high and beneficent public purposes which constitute the foundation upon which the Sanitary Institute has taken its stand; and we desire very gratefully to acknowledge the helpful sympathy extended to our Association, in its early days, by your Secretary (E. White Wallis, Esq.), and by many of your Council, who have honoured us by accepting the position of Hon. Members of our Association. And we very gladly recognize the great opportunities possessed by your Council to educate, to foster, and to spread amongst all classes of the community an enlightened estimate of the value of sanitary science.

We are perfectly conscious also of the great difficulty which presented itself to your Council in initiating examinations of sanitary inspectors and granting certificates; and that, therefore, the standard of fitness could not at first be raised very high.

That being admitted, we venture to direct the attention of your Council to the fact that a large number of the most competent and experienced sanitary inspectors, in addition to the Council of the Association, are very strongly of opinion that the time has now arrived when, in the interests of the public health, a higher standard should be insisted upon, and an essential basis of qualification for admission to the examinations of the Sanitary Institute be required in all candidates for the Institute's Certificate of fitness to discharge the duties devolving upon a sanitary inspector.

The Council of the Association will be glad if the Council of the Sanitary Institute will be good enough to receive a deputation who would express the views of the Association upon the question of examinations and certificates more fully and satisfactorily.

Awaiting your favourable reply,
We are, Gentlemen,
Your obedient servants,

Signed on behalf of the Council. { H. ALEXANDER, *Chairman.*
SAMUEL C. LEGG, *Hon. Sec.*

In reply to the foregoing letter, the Council was invited to confer with the Council of the Sanitary Institute, and the meeting took place on February 18, when the Chairman and Mr. Hearne, of Paddington, addressed the Council of the Institute upon the following points upon which we were agreed:—

(1.) We recognize the great purposes, the high position, and the Authority of the Sanitary Institute.

(2.) We recognize as a great public gain that the Sanitary Institute, ten years ago, enforced upon the public attention the necessity of an examination of sanitary inspectors.

(3.) We recognize that in the initiation of examinations the standard could not be raised very high.

(4.) We submit that the time has now come when all candidates for the position of sanitary inspectors should be required to pass a thorough examination.

(5.) We submit that no candidate should be entered for examination unless he can give proof that by his previous occupation and practical experience he is fitted to discharge the duties of a sanitary inspector.

(6.) We submit that the examinations should be arranged in two grades.

(7.) Candidates for the first grade should give proof that they have been fairly educated, and should be examined upon the eleven subjects given in the Institute's syllabus (see syllabus), and, in addition, should possess a knowledge of building construction, equal to that required to obtain a first-class elementary certificate of the Science and Art Department.

(8.) Candidates for the second grade should have held the office of sanitary inspector for at least two years, and should give proof that they have been fairly educated. The examination should be based upon the syllabus of subjects for the first examination, but should be of a more advanced character, and, in addition, candidates should possess a knowledge of building construction, equal to that required to obtain a first-class advanced certificate of the Science and Art Department, and a thorough knowledge of material used in sanitary construction.

The following reply was received:—

THE SANITARY INSTITUTE,
March 22, 1889.

Mr. S. C. LEGG, *Hon. Sec.*,
ASSOCIATION OF PUBLIC SANITARY INSPECTORS.

DEAR SIR,—The Council have read with great interest and carefully considered the suggestion made by the Association of Public Sanitary Inspectors to the Council of the Institute. As far as they find it practicable, the Council will be glad to give effect to the suggestions, and they hope that the result will be a permanent improvement in the status of inspectors.

Yours faithfully,
E. WHITE WALLIS,
Secretary.

No further communication has, however, yet been received; nor has any effect been given to the suggestions made to the Council of the Institute to improve the character of their examinations.

The Council records its pleasure at the continued prosperity of the North-Western District Branch and that Mr. Davenport, representing the branch, has been enabled to attend the meetings of the London Association. In view of the affiliation of the Manchester and Yorkshire Associations, which will doubtless come to pass when the value of a united front becomes better understood, the Council reiterates "that affiliation neither implies any infringement of the autonomy of District Associations, nor any control by District Associations of the Central Council, other than by the voice and vote of their representative members upon the Council as provided by Rule IV.; and it should be understood that the principal value realised by the Association, in the affiliation of District Associations, is the measure of the power contributed to the moral force which the Association is exerting upon public opinion and the legislature on behalf of all sanitary inspectors and the high interests of the public health. This is the function of the Association as a whole, including its branches, but on the other hand it is quite obvious that an affiliated Association has a very important function of its own, and thereby may do very good service within its own district, in cultivating public respect for sanitary inspectors, through public expositions, lectures and addresses by its members on questions affecting the public health, and the position of inspectors under the law.

The Council gladly recognize the spirit of loyalty which animates the members, many of whom, though they are located at such great distances as to entirely preclude their attendance at the monthly meetings of the Association, yet follow its proceedings with the greatest and the most intelligent interest.

It is very gratifying to the Council to be enabled to report that during the past year sixty-one new members, nineteen Associate members, and three hon. members have been enrolled. On the other hand, the Council regret that death, and other causes, has removed the names of some highly esteemed members, amongst whom are four members of the Council, Mr. Rumble, deceased; Mr. Bateman, who has accepted an appointment in Port Natal; and Mr. Hearne and Mr. Jameson, who have also accepted appointments in Buenos Ayres.

The Council concludes by congratulating the Association on a year of much solid progress, of full harmony in purpose, and of a wide development in brotherhood amongst the sanitary inspectors of the kingdom.

SANITARY MATTERS IN AMERICA.

(From our own Correspondent.)

THE Government of the United States has officially recognized its duty in attempting to determine the cause of, and methods of preventing, cholera and yellow fever, both of which diseases are intermittent visitors to our shores. Commissioners were appointed for the study of each disease.

Governmental study of cholera.

Dr. E. O. Shakespeare, of Philadelphia, has concluded his four years' labour as United States Commissioner to investigate the origin, progress, epidemics, and cure of Asiatic cholera, and is now engaged in reading the proofs of his report of nine hundred pages as rapidly as it passes through the hands of the public printer at Washington. The Doctor's labours and studies have covered the world and all its scientific literature on the subject, and his report will be a document of unusual national import. He has exhausted every source of information. He has travelled through Italy, Spain, Great Britain, Germany, Austria, South America, and Eastern Asia. He has obtained the most valuable statistics from the academies and governments of Europe. He has found means of direct communication even with the rank and file of the

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medical profession of Europe for statistics of his own preparation. He has studied the history of the disease from its birth in lower Bengal to the last epidemic in this country, and his report covers the whole subject.

The United States Commissioner's independent report speaks with the voice of a national document in confirmation of the German Commission's investigations at nearly every point, and is therefore in antagonism with the views of the English Commission on the question of national quarantine regulations.

The most important conclusion is the proven necessity for the creation of a perfect national quarantine system. Dr. Shakespeare terms the present system, as far as national control is concerned, simply valueless and farcical. The proper security can never be gained from maritime quarantine until the whole system is operated under national control, and this will make the occasion for some comprehensive legislation by congress.

Probably the conclusion that will arouse the now universal public interest touches the question of inoculation. The demonstration of the truth that inoculation gives ten times the immunity from the disease enjoyed by non-inoculated persons is unclouded save by Dr. Shakespeare's aside comment that it will probably be two or three years before inoculation will be popularly accepted. Yet 30,000 persons were inoculated in Spain with such results as to prove that the inoculated man stands six times as many chances of escaping the disease and ten times as many chances of living through any epidemic.

After giving the world-wide history of cholera in the first chapter, and treating of its East Indian origin and of the filthy habits of the Hindoostan people, which conduce to the spread of the disease, in the second chapter, and recounting in the third chapter the results of foreign and personal investigations touching the bacteriological discoveries since the Germans startled the world with the announcement of the finding of the cholera germ in Egypt in 1883, Commissioner Shakespeare reaches the most interesting and popular feature of the subject when he begins to talk about the poison secreted by the cholera germs, the ptomaine, which simply corresponds to the venom of the snake. It has long been in dispute by numerous scientists whether this poisonous secretion of the little snakes was the cause of the disease or not, but Dr. Shakespeare assumes the aggressive position of one who has demonstrated the fact. He says:—

"Investigations show that the virulent poison contained in the bowels of cholera patients is identical in its effects with the poison produced by artificial culture of the Koch cholera bacillus. Investigation showed that certain animals could be protected from artificial productions of Asiatic cholera by injections of either the living germs or of ordinarily fatal doses of ptomaine. This raised the question whether a natural attack of Asiatic cholera, as of small-pox, scarlet fever, and other diseases, lessen the danger of another attack. Most authorities have said 'No'; but since 1832 a few distinguished scientists have thought it did. So while in Spain I addressed 2,500 questions to Spanish physicians, each of whom had observed an average of thirty cases. Only eight reported that they ever saw cases of a second attack. Only two of these could rightly be called a second attack, and in these two cases it was doubtful whether it was Asiatic cholera."

The strong proof, aided by the confirmatory official statistics of 50,000 cases in India and similar inquiries by the French Academy, leads directly to the plan of inoculation. The explanation of the protection is that the blood is inured to the poisonous inoculation just as the morphia eater may harden his system to the use of the poison by taking small doses. In a natural attack of the disease the blood receives less of the poison from germs taken into the stomach than it has been accustomed to by the process of inoculation.

The preparation for the inoculation consists of beef broth, peptone (the gastric juice of the hog), common salt, and a small quantity of gelatine. The germs are placed in this mixture to grow, and the whole is injected into the tissue with the hypodermic syringe. The poison alone passes into the blood.

Although Dr Shakespeare expresses doubt whether ptomaine inoculations will be generally accepted within two or three years, the possibility that within five years or a decade inoculations against cholera will be as common as inoculations against small-pox is wonderful to contemplate.

The report looks to improved hygiene as the more immediate safeguards to the stomach, through which alone the cholera germs gain a foothold. Above all other considerations, that of pure drinking water stands highest in Dr. Shakespeare's estimation.

The study of yellow fever.

Dr. George M. Sternberg, major and surgeon, United States army, has but recently returned from a six months' stay in Cuba, where he has been continuing, under the auspices of our Government, his researches with reference to the cause and prevention of yellow fever.

He found in the hospitals a sufficient number of cases, and in the course of the summer made thirty autopsies. He has brought with him specimens in alcohol and cultures of microbes, with which he will continue his investigations during the winter at the Johns Hopkins University. At the end of this time he hopes to present a general report of his investigations to President Harrison.

"My researches up to the present," says Dr. Sternberg, "have not led to a positive demonstration of the specific cause of the disease. But I have isolated a considerable number of pathogenic bacilli—disease-producing germs—from the intestines of yellow fever cases, and have strong hopes that one or more of these may prove to be the specific germ. I have confirmed my previous conclusions, as to the absence of specific microbe organism in the blood and tissues of the patients, and have failed to find in any of my cases the germ which Dr. Frere, of Brazil, has claimed to be the cause of the disease. For this reason I have given my attention entirely to the bacilli of the alimentary canal. As none of the lower animals are subject to yellow fever, and inoculation will, therefore, be impossible, it will be extremely difficult to arrive at a positive demonstration. It will, moreover, be necessary to make extensive comparative researches to ascertain the character of the bacterial flora in the intestines in other diseases. I have isolated a long list of unknown and undescribed bacteria found in the digestive system of yellow fever patients. But I have yet to prove that some of these are uniformly constant in this disease, and are not found in others. For instance, in all my researches I have never found the comma-bacillus of Koch, now generally believed to be the cause of cholera."

The water supply of New York. City.

On June 13, 1888, the Mayor of the city of New York, appealed to the State Board of Health to make a thorough examination of all the sanitary conditions relating to the sources and storage of water supply for the city, and showed that regulations might be formed that would protect the inhabitants of the city against the pollution of the water. The State Board made a most thorough examination, through Professor C. C. Brown and Emil Kuichling, the engineers. A marginal zone was established upon every reservoir, pond, or lake adjacent to every water-course of any kind throughout the entire Croton watershed, and also on those parts of the Bronx and Byram watersheds that are in use. This zone varied from 30 to 50 feet from the edge of the water, and it included all kinds of surface contamination. A second zone, distant from the water 100 to 200 feet, was formed to prevent defilement of the surface soil and subsoil. The rules laid down and adopted, and which are now laws, were based upon the drawing of these two zones.

Special rules and regulations have been made relating to privies adjacent to lakes and water-courses. Other rules refer to house slops, sink wastes, laundry water, and other sewages; while garbage, refuse, composts, dead animals, and cemeteries have each their own restrictions. A penalty of not less than $50.00 nor more

than $100.00 is imposed upon any corporation, person, or persons, guilty of a violation of or non-compliance with any of the above-given mandatory rules or regulations, to be recovered under an Act of Legislature.

The report of the inspection of the Croton watershed by Engineer Brown is a most remarkable production. The plan of the report includes a description of the natural characteristics of the watershed, giving its location, extent, geological formation, character of surface and soil, amount of rainfall and of river discharge, including therein a statement of the natural sources of pollution to the water supply, both inorganic and organic matter, discussion of the condition of the Croton water, chemically considered, for a series of years, with tables showing the results of analyses at various times (this discussion is furnished by Professor Elwyn Waller, Ph.D., of Columbia College, who has made many of the analyses, some of which are here published for the first time), and general descriptions of several methods of systematically disposing of the organic wastes, from villages and hamlets, the adaptability of any of the various systems that may be suggested to individual cases.

The Michigan State Board of Health has recently published a paper by its secretary, Dr. H. B. Baker, in which he asks the question, How much the average city or village can afford to pay its health officer? He answers this question in this way:—Statistics which cannot be questioned prove that, in those localities in Michigan where the recommendations of the State Board of Health are carried out, above 80 per cent. of the deaths from diphtheria and scarlet fever are prevented by the thorough isolation of all infected persons, and the thorough disinfection of all infected persons, things, and places. Statisticians usually value a person in the prime of life as worth to the community about one thousand dollars. Dr. Baker thinks that in a village of fifteen hundred inhabitants a health officer can easily save the lives of two children and one grown person in each year, and he concludes that such a village can well afford to pay its health officer $2,000 for the prevention and restriction of scarlet fever, diphtheria, and typhoid fever—and make money by the transaction.

How much should a city pay its health officer?

The Ohio State Board of Health has adopted the plan of holding migratory meetings, to which the public is invited to hear papers read on sanitary topics.

In Michigan, physicians are now required by law to report to the health officer every case of typhoid fever.

SANITARY MATTERS IN GERMANY.

(From our own Correspondent.)

The fact that mortality and morbidity among prisoners are greater than amongst people at large, under the same social conditions and of the same ages, has long been proved by statistics, and the hostile influences of prison life will probably never be wholly counteracted by any sanitary measures and improvements. A comparison between the enormously high death-rates of former times with the present vital statistics of prisons shows the influence of better sanitation and more humane treatment in a very striking manner. An able treatise of Dr. Baer (*Morbilitaet und Mortalitaet in Gefaengnissen*, Hamburg, 1888) gives some interesting details on this subject, and contains valuable statistics, so far as they are obtainable. A century ago typhoid fever was the prevailing disease in the prisons of nearly all countries, and next to that disease, scurvy, scrofula, diseases of the bones were more or less frequent; but the highest number of deaths in prisons was, and still is, caused by phthisis. The mortality caused by consumption is even more excessive in modern prisons, where the best known sanitary arrangements prevent the occurrence of epidemic and infectious diseases so frequent in old-fashioned prisons. The cause of the prevalence of phthisis lies in the nature of prison life itself, which creates and favours the development of these diseases. Though the conditions vary widely in different prisons, the researches of Baer allow of the following conclusions in reference to the morbility of prisoners: 1. Prisoners generally are more exposed to illness than persons of the same age and conditions of life when at liberty. 2. Female prisoners fall ill more frequently than males, but diseases of male prisoners last longer. 3. In houses of correction (*Zuchthausern*) the duration of illness is longer than in other prison institutions; this depends not only on the longer mean duration of confinement, but also on the rigid discipline in penitentiaries. 4. The most common diseases in prisons are diseases of the respiratory and digestive organs. 5. If endemic or epidemic diseases obtain a footing in prisons or penitentiaries, the prisoners are attacked in greater number than the free population of the same social status.

Mortality of prisoners.

The mortality is likewise very different in various prison institutions and countries. In Prussia the mortality in *Zuchthausern* during 1885–86 varied from 20 to 60 per 1,000 inmates. In Bavaria, after the introduction of a milder discipline and better food and treatment, the mortality in some institutions has fallen from 70 per 1,000 in the years 1840–48 to 44 per 1,000 during 1872. In Baden, the mortality is as low as 20 per 1,000. In Austrian prisons the mortality per 1,000 was, during 1869–72, among men 31·5, among women 35·9; from 1872–74, 44·3 and 31·1; 1877–80, 46·0 and 39·1; and 1883, 54·2 and 56·7 respectively. In prisons where solitary confinement is enforced the mortality is very low (only 13·0 per 1,000 during 1877, 1879, and 1880). In most prisons the death-rates are lower now than they formerly were, in some even so low as to scarcely allow of any further decrease; but there are others in which the mortality is still excessive. The high prison mortality has to be accounted for not only by the noxious influences of prison life but also by the physical conditions of the prisoners, the great majority of whom belong to the lower classes of society, amongst whom there is a higher mortality even when free than amongst well-to-do people. Baer's researches reveal some interesting facts as to the mortality of prisoners during the different periods of confinement. The largest number of deaths amongst prisoners occur during the first three years of imprisonment, and particularly during the second year. Those who enter the prison in ill-health succumb very rapidly; the effects of imprisonment itself become visible at the end of the first and the beginning of the second year of confinement. If the prisoner has resisted the weakening influences of imprisonment during three or four years, he acquires a certain degree of immunity, and his organization accommodates itself to the existing conditions. Persons used to life in the open air (peasants, soldiers, sailors, beggars, and vagrants) succumb soonest. The mortality in different prisons varies widely according to the duration of confinement in them. In the same prison, with the same discipline and the same food, the death-rate will change as soon as the mean duration of confinement varies (Wiener med. Wochenschrift).

Propagation of typhoid fever by means of water or other liquids, or by air, is frequently observed; cases of direct communication by personal contact are less common, and when occurring, excite sanitary interest. Professor Dr. Finkler, of Bonn, gives an account of several epidemics of typhoid fever (*Typhus abdominalis*) in which infection from person to person was the only cause of the spread of infection. In Satzveg (*Eifelgebirge*) where typhoid fever was prevalent, a woman was nursed by her mother who had come for this purpose. The disease showed itself in the mother after her return home to Dollendorf, where no cases had occurred before. She was nursed by two women from the neighbourhood, who were afterwards also attacked and introduced the disease into their families. This was the beginning of an epidemic, which continued during a year in the village, fifty to sixty cases of typhoid fever being recorded. Propagation by water supply is not probable, as the different families used various wells and no cases occurred

Typhoid fever.

Spread by personal contact.

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along the course of a brook running through the village. From Dollendorf the epidemic was introduced into the clinical hospital of Bonn, where three patients from Dollendorf had been conveyed, and where nine persons caught the disease, all of them by direct communication with the sick, by washing their linen. No case of typhoid fever became known in the town at the time, and the epidemic was confined to the interior of the hospital. But this was not the end of the epidemic; two nurses, who had been sent to Dollendorf to nurse the typhoid patients, transmitted typhoid fever to the hospital of Koenigswinser on their return there, and there were seven cases during the month of January. Here, again, the disease was limited to persons who had come into direct contact with patients, and to the nurses. In the month of September of the same year another epidemic appeared in the hospital and the neighbouring houses, which caused seventeen typhoid cases up to December. Whether this latter epidemic was a result of the former cannot be certainly affirmed. The first case was that of a gardener from a place where typhoid fever was prevalent. He was attacked three weeks after his arrival, and communicated the disease to a patient who was treated in the hospital for a complicated crural rupture. These observations justify the conclusion that there exists a direct contagion of typhoid fever, that it may be communicated by healthy and convalescent persons, and that the germs retain their vitality for a prolonged period.

Notification of typhoid fever in Cologne.

A sanitary regulation, dated August 8, 1835, provides that not only undoubted cases of typhus and typhoid fever, but also every case of suspected illness (doubtful gastric fever, &c.) must be reported to the authority by medical men, householders, and hotel-keepers. The measure seems, however, not to have been strictly enforced and had fallen into desuetude, until it was recently revived by the Government after a typhoid epidemic had appeared in a place near Cologne, which only came to the knowledge of the authorities after its termination. Like Munich, Cologne is one of those towns where typhoid fever is always endemic. Since 1872, and probably before that time, the disease has never totally disappeared from Cologne. The cases occur equally throughout the whole town, without giving preference to one or the other district, but also without at any time becoming epidemic. Typhoid mortality is, however, diminishing in Cologne, as shown by the following numbers of deaths caused by typhoid fever. During 1872 they were 92; 1873, 71; 1874, 58; 1875, 61; 1876, 46; 1877, 44; 1878, 53; 1879, 36; 1880, 50; 1881, 46; 1882. 42; 1883, 52; 1884, 29; 1885, 22; 1886, 23. The years 1872, 1875, 1878, 1880, and 1883 are marked by an exceptionally high mortality, while in the intervals, and especially since 1883, the decrease has continued, thanks to the improvements effected in the general conditions of the town and in the sewerage works, which were begun some years ago and are still progressing. As to the influence of ground water on typhoid fever, the observations of Pettenkofer in Munich do not apply to Cologne, for while the level of ground water is highest during the last months of the year, the typhoid mortality is highest towards the end of summer. This seems to indicate that the development of typhoid fever is not directly influenced by the fluctuations of ground water, but rather by the temperature of ground air and its composition, the existence and proportion of typhoid bacteria in the ground, and the opportunity of invasion offered to the latter.

SANITARY MATTERS IN GLASGOW.

(From our own Correspondent.)

A new kind of nuisance.

In the SANITARY RECORD for July 1885, the process of making paper from wood chips is described, as shown at the Antwerp Exhibition. A paper mill in Glasgow has lately commenced this manufacture. The work is in the immediate neighbourhood of the City Fever Hospital, where the patients and officials have had reason for some time back to complain of nausea and sickness. An intolerable smell at certain intervals was traced to the paper mill. After a thorough inspection of the works and the different processes there, the sanitary inspector, Mr. Fyfe, assisted by the city analyst, Mr. Tatlock, has come to the conclusion that the smell is caused by the boiling or steaming of wood chips mixed in high pressure digesters with caustic soda. The smell takes place when these tanks are being emptied of their contents, and also during boiling, and is most sickening and offensive. To remedy this it will perhaps be necessary to build a high stalk to carry these vapours clear of the neighbourhood.

Notification of diseases.

The local authority have agreed to adopt the New Notification of Diseases Act, and are making arrangements for its coming early into operation. There has been no epidemic or prevalence of infectious diseases of late in Glasgow. It is a remarkable fact there have been no cases of small-pox for several years.

Inspection of American meat.

As a temporary arrangement until legislative powers are acquired in ensuing session of Parliament, the local authority lately appointed an assistant sanitary inspector to attend daily at the Yorkhill Foreign Animals Wharves and Slaughter-houses for the purpose of watching and reporting any suspicious carcases of American cattle that may have died on the voyage. Such carcases after being skinned, present a darker coloured flesh through the extravasation of the blood, and decay more rapidly than animals slain in the usual manner. A considerable number have been seized and destroyed with the consent of the owners. The latter, however, have now, while admitting that such carcases are unfit for human food, claimed the carcases for "purposes of commerce," as they term it. By this, it is understood that they wish either compensation for the carcase along with the fat, or that they be allowed to remove these, leaving the flesh to by destroyed by the local authority. An owner declined to grant authority to destroy a carcase, and a petition was submitted to the sheriff. After some discussion an arrangement has been come to by which the local authority will, by immersing the carcase in a chemical solution of salts and acids, render it unfit for human food, and the owner will be allowed thereafter to get possession and sell or dispose of to best advantage, but proof on the general question is to be heard on November 14.

Diplomas for sanitary inspectors.

As arranged at the meeting of the Sanitary Association of Scotland in July last an examination of candidates for the office of sanitary inspector will be held in Glasgow in January, and diplomas granted to the successful competitors. The examiners are Dr. Nasmyth, Cowdenbeath, Dr. Smith, Motherwell, Mr. Peter Fyfe, Glasgow, Mr. G. A. D. Mackay, Edinburgh. It is said that the examination will be a more severe one than that of the Sanitary Institute of Great Britain. There will be subsequently examinations in Edinburgh, Aberdeen, &c.

NOTES FROM THE NORTH

(From our own Correspondent.)

Felling.

THE medical officer of health for the Felling Local Board, near Gateshead, reports that the birth-rate of that district for the month of October was 32·5 per 1,000, and the death-rate 14·4 per 1,000 for the same period.

"Boiley."

An inquest was held at Sunderland on November 5 on the body of a child three weeks old, who, in consequence of the want of mother's milk, had died soon after being fed on the accustomed water-biscuit boiley. In answer to Mr. Graham's (the coroner) interrogations, the mother stated that she had given birth to twenty-three children, all of whom were now dead but four; the oldest of those that died only reached two years and two months; the majority dying

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much younger. The coroner asked the woman if it had never occurred to her that "boiley" was probably the cause of those deaths, when she admitted it might have been. Dr. Pearcey gave evidence that the death was by convulsions, the results of improper feeding. The coroner admonished the woman, and spoke of the danger of thus feeding her children. The jury gave a verdict in accordance with the facts.

The ambulance movement.

One of the most significant signs of the times is the spread of the ambulance movement in the populous towns and villages on Tyneside, not merely amongst the police force, who are specially instructed, but also in the numerous factories and ship-yards to be found in that district. The importance of first aid to the injured is now happily well understood in all the most important centres of industry in the north.

The encouragement of infection at Herrington.

Dr. Park, the medical officer of the Houghton-le-Spring district, reports that the severe epidemic that recently existed in the Herrington district of the county of Durham had passed away. There is no form of disease specially prevailing, except scarlet fever, which continues to break out. Dr. Park says this is not to be wondered at, as it is almost an impossibility to prevent people visiting infected houses, and children from infected families playing with others who are free from the malady. The doctor condemns the fatalistic notion which the people seem to entertain, that if they have to contract an illness they will do so, notwithstanding all precautions taken.

CONGRESSES AT THE PARIS EXHIBITION.

THE Congresses which have been held in Paris since the opening of the Paris Exhibition have been very numerous and varied, and many, apart from the Hygienic Congress, have been full of interest for the sanitary reformer. Some idea of the completeness of the great International Hygienic Congress may be gathered from the following division of it into eight sections:—(1) The hygiene of childhood, milk supply, overwork in schools, &c.; (2) Industrial and professional hygiene, work of children in factories, unwholesome industries, &c.; (3) Town and rural sanitation, construction of dwellings, over-crowding, ventilation, &c.; (4) the germ theory applied to hygiene, infectious fevers, &c.; (5) International hygiene and sanitary police; (6) Food adulteration, water supply, filtering processes; (7) Demography, sanitary statistics; (8) Cremation. The last section constituted a separate Congress of itself. On each of the eight sections printed reports were placed in the hands of the members of the Congress before the meetings in order to serve as a basis for discussion. In the first section an important discussion arose as to measures that should be taken in schools to prevent the spread of phthisis by the sputa of youths suffering from tuberculosis. A Russian *savant*, Dr. JABLONSKI, made the proposal that children suffering from tuberculosis of the lungs, or even only suspected to have this disease, should be sent home at once. The proposal received no support, however, from the members of the Congress. As the outcome of the discussion on the proposal, it was resolved: "That children who are undoubtedly suffering from tuberculosis may render the adoption of measures prescribed by the authorized medical attendant necessary for the preservation of the health of the school."

The prevention of phthisis.

THE REPORT ON THE BEST MEANS OF PROTECTING THE HEALTH OF CHILDREN, compiled by Dr. LANDOUZY and Dr. NAPIAS, elicited many interesting facts and statistics, led to much discussion, and was finally adjourned. Dr. DESMOULIN, of Ghent, pointed out that the mortality among rich children ranged from 10 to 20 per cent., and among the poor from 30 to 60 per cent. Many set down the chief cause of a high rate of mortality to poverty, whilst others thought that by restricting the work of children the poverty would be increased.

The best means for protecting the health of children.

THE REPORT OF THE FRENCH GOVERNMENT COMMISSION ON UNWHOLESOME DWELLINGS occupied the delegates for a considerable space, the knotty point being whether the Commissioners could deal with the question satisfactorily or whether, as M. JOURDAN suggested, special salaried inspectors should be appointed to inspect houses and make sanitary improvements compulsory. The delegates finally decided that the French law of April 13, 1850, on unwholesome districts, should be revised, to the extent that the appointment of commissions on insalubrious districts should be compulsory throughout France; that the cubic space per inhabitant should be from 14 to 16 cubic metres, and that sanitary boards should be established in every town.

Unwholesome dwellings.

THE INTERNATIONAL CONGRESS ON THE HOUSING OF THE POOR adopted the following important resolution, with only five dissentients: "That the State should enact special laws to bring about the construction of artisans' dwellings, &c." They also resolved that the authorities might destroy all insanitary dwellings, and that they should compel householders to supply water to their tenants.

The Report presented by Dr. PROUST on SANITARY WORKS IN SEAPORT TOWNS is of the utmost importance to Frenchmen. The summary of its important points is as follows:—(1) That it is the strict duty of Governments and municipalities to render ports healthy; (2) That sanitary works for seaport towns are more necessary than for other towns; (3) That it is only when such sanitary works had been accomplished that any notable reduction in the death-rate and zymotic death-rate will take place; (4) that it is only when the ports presented a soil unsuitable for the penetration or morbid exotic germs that the last quarantine checks should be abolished. At the final discussion on the question of quarantines, Dr. PROUST modified clause 4, so that when adopted by the members of the Congress it ran as follows:—"It is only when seaports present a soil which cannot be penetrated by exotic morbid germs (cholera, yellow fever, and plague) that the last restrictive measures can be suppressed." This resolution is a great step forward and is of the utmost importance.

Sanitary works in seaport towns.

THE TREATMENT AND REMOVAL OF DOMESTIC REFUSE occupied an afternoon's discussion; the chief point raised, but not satisfactorily thrashed out, being as to whether house refuse might be partially dried and then packed under some very powerful pressure. Reduced in bulk and lessened in weight it would cost less to transport to distant agricultural districts, where a more ready market would be available. A resolution to the effect that all refuse should be put outside the dwellings before night and removed daily was carried unanimously. It was pointed out in the course of discussion that in England the contractors were paid to remove the refuse, whilst in France profits were made out of it. Town refuse in France is worth from three to four francs the cubic metre, on account of the large quantity of vegetable refuse.

The treatment and removal of domestic refuse.

THE QUESTION OF THE NOTIFICATION OF INFECTIOUS DISEASES led to a long discussion, the delegates voting that carding the wool of bed mattresses should be forbidden within the walls of a town; that a disinfecting service should be in working order in each sanitary district, and that the notification of infectious fever to the authorities should be compulsory. In Italy doctors were compelled to notify all infectious cases to the sanitary authorities. A resolution was likewise passed, forbidding the holding of fairs in the streets of large towns and compelling them to be held in fields or open spaces outside the towns. It has been found that the clowns; mountebanks, and others assisting in fairs,

The notification of infectious diseases.

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have often been the cause of outbreaks of certain epidemics, notably of small-pox.

The sewage farm at Rheims.

The examination of the new sewage farm at Rheims was largely attended by all members of the Congress. The sewage farm was inaugurated some four months ago; but, unfortunately, its chief use is merely to prevent the contamination of the river. It does not at all help in draining Rheims as it should be drained. The town is still drained into cesspools, and it has not water enough for water-closets. When the water supply is increased, then the real value of the sewage farm will be available to drain the town direct into its sewers. There is a pumping station at the farm to send some of the water up to the higher grounds. When there is more sewage than the soil under cultivation requires, the water is thrown on to some waste land.

The pollution of rivers.

The Congress, in its debate on THE POLLUTION OF RIVERS, decided that the pollution of underground watercourses and of rivers by the residue of factories should not be allowed, and that water from factories should not be allowed to flow into a stream unless it was proved to be free from all injurious substances. Then arose the question as to who should be responsible for the application of such a law, and it was thought that the sanitary authorities ought to carry out the necessary works if the manufacturers persistently refused to do so, and compel the persons interested to defray the expenses. It was pointed out that many manufacturers had benefited by the application of the law, as it had led to the discovery of the utilization of waste products. Among other subjects discussed was the question of the inspection of meat and the injurious effects of the using of glucose for making syrups, &c. Dr. GIRARD, of Rheims, urged that diseased meat should be cremated, as this was the best means of preventing it being surreptitiously sold.

Vaccination.

In regard to the discussion on vaccination, it is noteworthy that, with one single exception, every speaker demanded that vaccination should be made compulsory by law.

Filtration.

M. MAIGNEN read a lengthy but interesting paper on filtering processes, and made many experiments with his "Filtre Rapide," showing its efficacy in preventing the passage of microbes. This was proved by the inoculation of guinea-pigs and rabbits, which died when inoculated with water before filtration, but survived when inoculated with filtered water. The microbe used was that of anthrax.

Condition of the working classes in Russia.

One of the most impressive papers read at the Hygienic Congress was that by Madame TKATCHEFF, the subject being THE CONDITION OF THE WORKING CLASSES IN RUSSIA. There are no statistics to show what is the rate of mortality among the Russian working-class population, but the general mortality is fairly significant. The average mortality in Russia is 37 per 1,000, whilst in Sweden it is only 17. The workers in the factories have no homes, and very often sleep in the factory itself, in the midst of the machinery, or upon wooden shelves in a sort of dormitory, full of bad odours. They have hardly any clothes, and their condition is altogether a very shocking one. At the conclusion of the reading of the paper, it was unanimously resolved "That this section invites the Russian delegates to submit to the International Congress of Hygiene, in London, in 1891, a report on the results of the new laws for the protection of labour, and a resolution for the improvement of the material condition of the working-classes in Russia."

At the close of the Congress, all the resolutions adopted by the various sections were read over, those relating specially to French legislation were referred to the French Committee, and those partaking of an international character were confirmed by the Congress as a whole. The latter included resolutions in favour of a permanent inquiry into the cause of excessive infant mortality; of conferring on municipalities the power to compel house-

Results of the Congress.

holders to subscribe to the town water-supply; the abolition of all laws preventing cremation; the encouragement of cremation on battle-fields; the publication of methods of food and water analysis; the teaching of hygiene in schools; the vigorous enforcement of regulations for the prevention of hydrophobia; the inspection of pharmacies, &c.

Dr. BROUARDEL, President of the Congress, in closing the proceedings, thanked his colleagues from abroad for the support they had given the Congress, and announced that the meeting of the next International Congress of Hygiene would be held in London during the first week of August 1891.

Mr. SHIRLEY MURPHY, the London County Council representative returned thanks in the name of the English delegation, stating that the cause they had in hand merited the support of all civilized nations.

Other Congresses which have been held, and which are of the greatest importance, are the INTERNATIONAL CONGRESS FOR THE ASSISTANCE OF THE WOUNDED IN TIME OF WAR, which led to some important debates. Antiseptic dressing, the mobilization of the Ambulance Services, the best means of teaching quickly how to render first aid on the battle-field, were all discussed. Dr. SCHNEIDER urged that soldiers should wear a medal about them, so that they could be readily identified. He also pointed out the necessity for speedy burials, and how these should be accomplished without harming the neighbouring residents.

Assistance of the wounded in time of war.

The International Workers' Congress, convened by the Possibilist party or the workman's party of France to deal with sanitary legislation, was the largest and most representative Congress of the kind ever held. The resolutions they carried were that the day's work should be fixed at ten hours as a maximum, and that this should be enforced by international law; that one day's rest out of seven was a necessity; that night work for men should be abolished as much as possible, and absolutely forbidden for women and children; that overtime should always be paid double the usual wage, and that it should never be more than four hours in the twenty-four. The sweating question, which has occupied so much attention in London of late, was dealt with exhaustively, and the Congress was of opinion that the State and municipalities should not make any contract or concession or allow of any undertaking where their sanction was necessary, unless the employers pledged themselves to pay proper wages, and to avoid long hours of work and employment of sweaters.

Sanitary legislation in France.

[If only all the resolutions at the Congresses could be carried into effect straightaway, what healthy peoples all ought to be. But unfortunately, as with all reforms, time is the great factor, and we must wait patiently and work step by step ere we see the realization of the demands. The Congresses have done splendid work, if only in arousing the public mind to the necessity of assisting their fellow-creatures to live purer and healthier lives.—*Reporter*.]

THE PLUMBERS' COMPANY.

A PUBLIC meeting has been held at Leeds for the purpose of distributing to plumbers in the locality the certificates of registration granted to them by the Plumbers' Company, London. Mr. J. Wreghitt Connon, president of the Leeds district council, occupied the chair, being supported by Mr. T. Pridgin Teale, Dr. Churton, and others. Mr. Pridgin Teale moved a resolution to the effect that the meeting heartily welcomed the formation in Leeds of a district council in connection with the movement for the national registration of plumbers. The resolution was seconded by the Rev. C. Hargrove, supported by Dr. Churton, and carried unanimously. Sir James Kitson, Bart., after making some practical remarks on the benefits to the public of the national registration system, presented certificates to 74 master plumbers and 85 operatives, making 159 in all.

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WORKHOUSE MEDICAL OFFICERS UNDER THE LUNACY ACTS AMENDMENT ACT.

The duties of medical officers of workhouses under the new Lunacy Act, which comes into operation in May next, are of a somewhat complicated nature, and may with advantage be studied beforehand. The following are the provisions which affect the workhouse medical officer:—

(1.) Except in the cases mentioned in the Lunacy Act, 1885, and this Act, no person shall be allowed to remain in a workhouse as a lunatic unless the medical officer of the workhouse certifies in writing:—*a*, that such person is a lunatic, with the grounds for the opinion; *b*, that he is a proper person to be allowed to remain in a workhouse as a lunatic; *c*, that the accommodation in the workhouse is sufficient for his proper care and treatment, separate from the inmates of the workhouse not lunatics, unless the medical officer certifies that the lunatic's condition is such that it is not necessary for the convenience of the lunatic or of the other inmates that he should be kept separate.

(2.) A certificate under this section shall be sufficient authority for detaining the lunatic therein named against his will in the workhouse for fourteen days from its date.

(3.) No lunatic shall be detained against his will or allowed to remain in a workhouse for more than fourteen days from the date of a certificate under this section without an order under the hand of a justice of the peace having jurisdiction in the place where the workhouse is situate.

(4.) The order in the last preceding sub-section mentioned may be made upon the application of a relieving officer of the union to which the workhouse belongs, supported by a medical certificate under the hand of a medical practitioner, not being an officer of the workhouse, and by the certificate under the hand of the medical officer of the workhouse hereinbefore mentioned.

(5.) The guardians of the union to which the workhouse belongs shall pay such reasonable remuneration as they think fit to the medical practitioner who, not being an officer of the workhouse, examines a person for the purpose of a certificate under this section.

(6.) If, in the case of a lunatic being in a workhouse, the medical officer thereof shall not sign such certificate as in this section mentioned, or if at or before the expiration of fourteen days from the date of the certificate an order is not made under the hand of a justice for the detention of the lunatic in the workhouse; or, if after such an order has been made, the lunatic shall cease to be a proper person to be detained in a workhouse, the medical officer of the workhouse shall forthwith give notice in writing to a relieving officer of the union to which the workhouse belongs that a pauper in the workhouse is a lunatic and a proper person to be sent to an asylum, and thereupon the like proceedings shall be taken by the relieving officer and all other persons for the purpose of removing the lunatic to an asylum, and within the same time, as by the Lunatic Asylums Act, 1853, provided in the case of a pauper deemed to be a lunatic and a proper person to be sent to an asylum, and, pending such proceedings, the lunatic may be detained in the workhouse.

(7.) If the medical officer of a workhouse omits to give such notice to a relieving officer as by the last preceding sub-section provided, he shall for each day or part of a day after the first day, and before the notice is given during which the alleged lunatic remains in the workhouse, be liable to a penalty not exceeding ten pounds.

(8.) Every relieving officer who fails to perform the duty by this section imposed upon him, shall for each offence be liable to a penalty not exceeding ten pounds.

(9.) The guardians of the union, to which a workhouse belongs, may direct that any lunatic detained therein be discharged or removed therefrom.

(10.) For the purposes of this section, an asylum provided for the reception and relief of the insane under the Metropolitan Poor Act, 1867, shall be deemed to be a workhouse, and the managers of such asylum shall exercise the powers and perform the duties by this section conferred and imposed upon the guardians of the union to which a workhouse belongs, and notices to be given to and proceedings to be taken by a relieving officer shall, in the case of a lunatic in any such asylum, be given to and taken by one of the officers of the asylum to be nominated for the purpose by the managers of the asylum.

(11.) An order under section 3 of the Lunacy Act, 1885, shall not authorize the detention of a lunatic after the expiration of fourteen days from its date, except under the conditions mentioned in this section.

(12.) As regards every pauper in a workhouse at the date of the commencement of this Act (May 1, 1890) as to whom a certificate has been signed under section 20 of the Lunacy Acts Amendment Act, 1862, no certificate or order of a justice under this section shall be required.

When a pauper lunatic is discharged from an asylum, hospital, or licensed house, and the medical officer of the asylum, or the medical attendant of the hospital or house, is of opinion that the lunatic has not recovered, and is a proper person to be kept in a workhouse as a lunatic, the medical officer or medical attendant shall certify such opinion, and his certificate shall accompany the notice of discharge, and the lunatic may thereupon be received and detained against his will in a workhouse without further order, if the medical officer of the workhouse certifies in writing that the accommodation in the workhouse is sufficient for the lunatic's proper care and treatment, separate from the inmates of the workhouse not lunatics, or that the lunatic's condition is such that it is not necessary for the convenience of the lunatic, or of the other inmates, that he should be kept separate.

ACTS OF PARLIAMENT OF THE LAST SESSION.

Mr. Brabazon Campbell, the Town Clerk to the Warwick Town Council, has drawn up a very useful *précis* of Acts of Parliament passed in the recent Parliamentary session, which it may be serviceable to reproduce, with the exception of that part relating to the Infectious Diseases (Notification) Act, which has already been very fully dealt with in our columns:—

Weights and Measures Act (coming into operation June 1, 1890).—This Act provides that every weighing machine used for trade purposes shall be stamped by an inspector, and the local authority is to make regulations for due verification and inspection. The Board of Trade may order a local inquiry as to how such verification and inspection is carried out. All inspectors appointed after the passing of the Act will have to pass an examination, and none are to be interested in the making, sale, or adjustment of weights; though, if the local authority think it advisable that the inspector should act as adjuster, the Board of Trade may sanction it. Penalties are imposed on offenders and the Act gives power to magistrates to order a conviction to be published. All coal must in future be sold by weight; except by special arrangement it is sold by boat or truck load. If a quantity over 2 cwts. be sold in a vehicle in bulk the vendor must provide a special delivery ticket, and is liable, with the person who delivers the coal, to a penalty of £5 if such ticket is not given to the purchaser. In any sale under 2 cwts. if less be delivered than is agreed to be brought penalties are incurred. The Act also contains provisions which compels retail dealers to be provided with verified weighing machines, and empowers local authorities, if they see fit, to regulate sale of coal in small quantities. A clause is introduced as to sale of bread out of carts, which protects bakers from being compelled to weigh bread except at request or on behalf of the purchaser.

Advertising Stations (September 29, 1889).—This Act provides that land not otherwise occupied, but which is used for advertising stations, shall in future be subject to be rated, and, if it be occupied and rated and the use of the same is granted for advertising purposes, such land shall be considered as increased by so much in value and assessed accordingly. If local authorities grant permission for the erection of hoarding or scaffolding on roads or other places over which they have control, they may prohibit the use of the erections as advertising stations.

Prevention of Cruelty to Children (August 26, 1889).—This Act provides that all persons having custody of children (girls under 16 and boys under 14) who by neglect or ill-treatment cause them unnecessary suffering or injure their health are liable to fine and imprisonment. And, if it should appear to the magistrate that such persons had any pecuniary interest in the death of children so ill-treated, the punishment may be increased. It is also rendered illegal to send children of the above age into streets to beg, under pretence of singing, performing, or selling goods, or to allow them even to be in any street or public-house for playing, singing, &c., for profit after ten at night, unless it be a place duly licensed for theatrical entertainment. If the child be under ten years of age it is illegal to allow it at any hour to be in a street, public-house, circus, or place of entertainment, playing, singing, &c., for profit. Certain powers, however, are given to justices to grant licenses under proper conditions to allow children over seven years of age to appear in such entertainments as pantomimes, &c. The police are empowered to take offenders into custody, and magistrates may order children for whose protection the Act is passed to be handed over to any person who will take care of them. Search warrants may be granted on a suspicion of any child being ill-treated in a house. There are supplemental provisions as to taking evidence, &c., and empowering boards of guardians to pay costs of proceedings.

Public Bodies Corrupt Practices Act (August 30, 1889).—This Act was passed for the more effectual prevention and punishment of bribery and corruption of members, officers, and servants of corporations and other public bodies, and renders the giver equally with the receiver liable to penalties.

The Technical Instruction Act (August 30, 1889).—This Act gives power to local authorities to supply or aid the supply of technical manual instruction, subject to certain restrictions; and to raise a rate, not exceeding one penny in the pound, for the purpose. Technical education is defined to be the principles of science and art applicable to industries, but not the teaching the practice of any trade, or industry, or employment. Manual instruction means the use of tools, processes of agriculture, modelling in clay or wood, &c. No scholar under "technical" instruction will be met by any "religious" difficulties.

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Sale of Horse-flesh Regulation Act, Ch. II. (coming into operation September 29, 1889).—This Act provides that no horse-flesh shall be sold in any place but a shop, when public notice is given that it is so sold, and gives power to sanitary authorities to prevent improper sale thereof.

Indecent Advertisement Suppression (January 1, 1890).—This Act was passed to put a stop to the practice of affixing a certain well-known class of advertisements on buildings, walls, &c., for passers-by to see and read. The bill-sticker, as well as the person who sends them, is liable to penalties, and it makes punishable the affixing or inscribing any indecent matter in public view.

SANITATION IN LEICESTERSHIRE.

(From our own Correspondent.)

Sanitary progress in Leicestershire has for a considerable time been strong and steady. In the borough of Leicester the extensive and costly sewerage scheme undertaken by the Corporation is being pushed towards completion, and though difficulties have arisen between the Corporation and the contractor, these have now been arranged. The borough surveyor (Mr. J. Gordon, C.E.) having been appointed Surveyor to the London County Council, the work of selecting his successor is now engaging the attention of the Town Council. With a population of 170,000 and a vigorous vitality which manifests itself in the rapid growth of the town, the sanitary work of Leicester demands ability, money, and energy. It is hoped that with the completion of the sewerage scheme, which includes the establishment of a sewage farm, much will be done towards reducing the pollution of the river Soar, which now receives a great amount of Leicester's drainage, and which, in its course towards the Trent, flows through districts which are suffering from the effects of its polluted condition. At a meeting of the Barrow-on-Soar Rural Sanitary Authority last week strong complaint was made of the state of the river; the clerk was instructed to call the attention of the Leicester Corporation to the nuisance caused by the foulness of the river, and one member declared that he had been compelled to remove his family from its banks on account of its bad effects upon health. At Barrow-on-Soar there are now several cases of typhoid fever; a stream, known as Shepherd's Brook, which runs through the village has been converted into what is virtually an open sewer, and the water supply is in a most unsatisfactory and even dangerous condition. Three samples submitted to the county analyst have been adversely reported upon, the use of one for domestic purposes being forbidden, and the other two declared unsafe. Steps are being taken to secure the suppression of all foul water supplies, and efforts will be made to secure better drainage. At Syston, a small town, also situated on the Soar and within the limits of the Barrow Union, there have been cases of typhoid fever, and a drainage system and good water supply are needed. At Hinckley, in another part of the county, cases of typhoid fever have recently occurred, and are reported to have been caused by unsanitary arrangements. At Aylestone, a village adjoining Leicester, the question of how best to dispose of the sewage has been earnestly discussed, and, after a somewhat stormy debate on Tuesday last, it was resolved, by a majority of one, to submit to the inspection of the Local Government Board a sewage scheme which, if carried out, will cost many thousands of pounds. Thus, although there remains much sanitary work to be done in Leicestershire, the local authorities are fully alive to the importance of carrying that work out as thoroughly and speedily as possible.

Robert Boyle & Son, Limited.—The directors of Robert Boyle & Son, Limited, ventilating engineers, London and Glasgow, have resolved, subject to final audit, to recommend a dividend of 12 per cent., free of income tax, on the ordinary shares of the company for year ending September last, placing to reserve fund one-sixth of the profits earned, and carrying forward £2,352 8s. 5d.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

"Something attempted, something done."

Barnstaple Rural (Population, 18,436).—Mr. J. Harper's annual report for 1888, though drawn up with great care, is devoid of any special interest. The fluctuations of birth and death-rates, due chiefly to accidental causes, are in the direction of an increase, and just raise the latter above the normal level of rural districts. Zymotic diseases were responsible for part of the increased number of deaths, there being 26 recorded against 17 in the previous year, but no severe outbreaks had to be dealt with. Due attention was given to isolation, and in several instances school closing was resorted to with satisfactory results. No structural works of any importance were undertaken during the year.

Birmingham (Population, 447,912).—A favourable year as regards climatic conditions, and the consequent beneficial influence on general health, had doubtless a great share in producing the very satisfactory returns made by Dr. Alfred Hill for the year 1888. But a still more favourable feature of the report is the steady improvement shown by the low death-rates of that and the three years immediately preceding—an improvement which may be taken as a direct result of the unremitting perseverance displayed in the removal of unwholesome conditions. Not only in the total death-rate is the improvement seen, but also to a decided extent in those essentially preventible diseases, fever and diphtheria, and some other zymotics. Dr. Hill appends, as usual, a map marked with spots and crosses to show the locality and general distribution of three of the most important zymotic diseases, viz. measles, scarlet fever, and typhoid fever. The map for the year under notice happily contains fewer marks than that of any previous year, with the exception of 1885. The general distribution of these diseases was, however, much the same. Scarlet fever has shown itself remarkably less fatal during the last four years, while the regularity with which its periodical wave has formerly advanced and culminated has been interfered with, and its progress retarded. Dr. Hill makes a strong point of this, and urges the extension of hospital accommodation as the only wise policy in preparing for the next epidemic wave. He thinks that the somewhat longer interval since the culmination of the last wave is really due to the improved facilities which now exist in the city, as compared with former years, for separating the infected from the healthy, and at the same time to the greater readiness with which all classes have availed themselves of the advantages which the hospital offers. Owing to the non-existence of any of the most important zymotic diseases in an epidemic form during 1888, less time was occupied in investigating the origin, and taking measures to check the spread of disease than in most previous years. Dr. Hill includes a short abstract of Dr. Ballard's valuable report to the Local Government Board on summer diarrhœa.

Scarlet fever.

Influence of hospital isolation.

Bootle-cum-Linacre (Population, 51,000).—Mr. R. J. Sprakeling's annual report for 1888 deserves mention as an excellent record of practical sanitary work, showing that attention to detail which is fraught with such promise to the well-being and health of the community at large. The year was not characterized by any great event, though there was plenty to engage the attention of the sanitary officials. Small-pox was introduced into the town four times, and great care was necessary to prevent the spread of the disease. Scarlatina was not specially prevalent—indeed, there was a very marked falling-off in the mortality; but disinfection in this as in other diseases was freely resorted to, and every available means of prevention adopted. Typhoid fever

Small-pox.

Disinfection.

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Typhoid: Diarrhœa. was much more fatal than in the previous year, and though there was a decrease in the number of deaths from diarrhœa, Mr. Sprakeling considers the returns unsatisfactory. He calls in question the middens and ashpits, and urges a more regular and frequent flushing of sewers. The water supply being now on the "constant" system, this might easily be done. The death-rate for the year was 16·5 per 1,000.

Middens condemned.

Water.

BRADFORD (Yorks) (Population, 229,721).—Dr. James MacLintock's first annual report is necessarily of a somewhat general character, as his short tenure of office since September 1888 had allowed him no time to grapple with the sanitary shortcomings of Bradford. Yet the few remarks he has made on the various subjects brought under notice show that he is fully alive to their relative importance, and that he will in the future bring about measures of improvement. The statistics which he has been able to gather indicate a fairly good condition of public health during the year 1888. The total number of deaths was less than in either 1886 or 1887, in spite of an increasing population, and the death-rate, 17·1 per 1,000, was the lowest recorded during the last twenty years. Zymotic diseases showed a considerable decrease, and the death-rate fell from 2·2 and 2·8 in 1886 and 1887 to 1·6 per 1,000. From phthisis the deaths were also less, and the rate equal to 1·7 per 1,000.

CARDIFF RURAL (Population, 17,888).—Dr. R. Prichard's annual report for 1888 gives a favourable record of zymotic disease and mortality, the death-rate from these causes being only ·55 per 1,000. Measles was prevalent throughout the year, but of so mild a character as to cause only 2 deaths. A fatal case of diphtheria was probably due to infection from a lady visitor whose child had died from diphtheritic croup a fortnight previously. Her clothing, it is stated, had been disinfected, but her hair had not. Sporadic cases of scarlet fever came under notice but none were fatal. Due attention was given to sanitary improvements. Wherever there was an outbreak of infectious disease the water supply was carefully investigated and the drainage looked to, and the report describes many serious nuisances which were abated during the year. Urban powers having been obtained in certain parishes, bye-laws had to be made for those places, and the opportunity was taken of revising the bye-laws in all the parishes in which they are in force, the chief alteration being a modification of the conditions as to the open space at the rear of a building so as to enable part of the space to be provided at the side of the building.

Diphtheria.

Bye-laws.

CLEATOR MOOR (Population, 10,420).—The favourable returns which Dr. John Eaton was able to make for the year 1888 speak well for the sanitary condition of the district. The death-rate from all causes was 13·3 per 1,000. No deaths were registered from so-called "filth diseases," and the total number of deaths from zymotic diseases was 16, exactly one-fourth of the number that occurred during the previous year. They were caused thus—Whooping cough, 10; erysipelas, 3; croup, 1; puerperal fever, 1; rheumatic fever, 1. The zymotic death-rate for 1888 was, therefore, 1·53, which is about half the average for the past fifteen years. One-half of the zymotic deaths during 1888 occurred during the first quarter of the year, one-fourth of them during the second quarter, three deaths during the third quarter, and only one during the last quarter of the year. Of 170 nuisances reported only two remained unabated at the end of the year. The weak points in the sanitary administration of the district have hitherto been the absence of complete notificatien of cases of infectious disease as they arise, and the imperfect methods of practising isolation and disinfection when such diseases are epidemic or prevail in the district. These defects Dr. Eaton hopes to see ultimately rectified.

Defective isolation arrangements.

EBBW VALE (Population, 17,000).—This district cannot be said to rank high in the list of healthy localities, when on the showing of its health officer, Mr. J. W. Davies, its death-rate from zymotic diseases was for the year 1888 as high as 6·7 per 1,000, and for 1887 5·23 per 1,000. The mortality among children under the age of 5 years is also described as abnormal, the death-rate being 10·58 per 1,000 as compared with one of 10·87 per 1,000 in persons above 5 years of age. Mr. Davies thinks that the cause is mainly to be found in the people themselves, in their indifference, ignorance, and neglect; and the report confirms this statement by numerous instances of want of cleanliness, &c. As regards the zymotic mortality, there is perhaps some reason to be found in the attitude of the authority itself, for although a fever hospital is available, it was not used owing to the absence of means for conveying patients to it. It must, however, be stated that there was a decrease in scarlet fever and diphtheria, and that an epidemic of measles caused more than half the number of zymotic deaths. Mr. Davies makes numerous suggestions for improvement, and with their adoption hopes for more favourable statistics.

Ambulance needed.

Measles epidemic.

FRIERN BARNET (Population, 6,896).—The sanitary condition of this district at the end of 1888 showed a decided improvement. A great deal has been done to improve dwelling houses; nearly all are now connected with the new system of sewerage; the scavenging has been placed on a better footing; and paving and making up of roads receive deserved attention. Mr. Hugh Stott regrets that a constant water supply has not yet been laid to the district, and he would also like to seemore energy displayed in compelling owners to remedy sanitary defects, especially among houses of the poor. The deaths during the year amounted to 71, and the death-rate was 10·2 per 1,000. Whooping cough was very fatal at the beginning of the year, and caused 9 deaths. Scarlatina caused 1 death. There was not a single case of typhoid fever or diphtheria brought under notice.

Water supply.

Whooping cough.

GATESHEAD (Population, 81,303).—In his annual report for 1888, Dr. W. Robinson congratulates his authority on the steadily improving sanitary condition of the borough, as shown by the statistics which he has collected for the past ten years. A steady reduction in the general death-rate, zymotic rate, and rate of infant mortality attests to corresponding improvements in the surroundings of the population, and this in a town so essentially a "workman's town" as Gateshead, is of the highest importance. A matter for some anxiety has been the inadequacy of the water supply to some outlying parts of the borough, the chief difficulty being on the score of the expense; but this will now be overcome by an Act of Parliament, compelling the water company to supply all parts, irrespective of height above high water mark, on equal terms. The large privy middens are gradually being replaced with small covered ash-privies, and important work in this direction will be further undertaken by some owners of property in the south-east ward. Many improvements have also been effected in the condition of dwellings. No necessity arose during the year for the closing of schools consequent on outbreaks of epidemic disease. The value of the hospital was abundantly evidenced by its reception of eight typhus fever cases from crowded quarters of the town, where, if speedy removal, disinfection, and destruction of bedding and clothes had not been adopted, a most severe outbreak must indubitably have taken place. The death-rate for the year from zymotic diseases was 1·6 per 1,000, and from all causes 17·0, the lowest of any year in the decade 1879–88.

Water supply.

Improvement in middens.

Hospital useful.

Typhus.

GLANFORD BRIGG RURAL (Population, 30,967).—As far as sanitary improvements are concerned, Mr. Moxon

Effects of sanitary improvements.

is certain that in some parts of his district the inhabitants are beginning to reap the fruits. He instances one village especially, where the general rate of mortality is less by 8 to the 1,000 since 1879, and where only 13 deaths have occurred from consumption during that period, the last being in 1886. He is of opinion that these circumstances are a direct result of better sanitary arrangements generally, and particularly from better drainage of subsoil and houses. The whole district has gradually been placed in better sanitary condition, and the general result is one of relative improvement of public health. The great mortality among infants which used to distinguish the Ironstone villages has become much more moderate. The death-rate for the year was low (14·9 per 1,000), and there was but little prevalence of zymotic sickness. Visits of advice and inspection were paid to several villages where outbreaks occurred, but there was no occasion to recommend the closure of any elementary school in consequence. Whooping cough and scarlet fever contributed most to the death-roll from these causes, with 9 and 6 deaths respectively.

Infant mortality.

GLOUCESTERSHIRE COMBINED (Population, 93,686).—With reference to the general sanitary condition of this district, Dr. Francis T. Bond reports that during 1888 there was, with the exception of measles, a marked absence of all forms of epidemic disease, and a decline of mortality to a lower point than any attained during the past 15 years. The decline in continued fever, which, as has been frequently pointed out, is the touchstone of sanitary progress, and which had in 1885 fallen to a very low level, fell lower still during the past year, and Dr. Bond thinks has reached what must be considered the "irreducible minimum," below which it cannot be expected to descend. No drainage works of any importance were carried out during the year, but the routine work of inspection and removal of nuisances was carried on as satisfactorily as in previous years. Dr. Bond gives the sanitary history of each of the constituent districts as regard zymotic diseases, and describes such sanitary work as was planned and effected. The death-rate ranged between 21·2 per 1,000 in Tetbury urban, and 10·5 in Tetbury rural district, the gross mortality of the 11 districts in the combination being at the rate of 15·1 per 1,000. It may be noted that in those portions of the district in which the death-rate had increased, the increment was mainly due to measles.

Decrease in fever prevalence.

HUDDERSFIELD (Population, 91,419).—The death-rate for 1888 was exceptionably favourable, and Dr. J. Spottiswoode Cameron, in commenting upon it, and pointing out the possibility of its still further reduction during the current decade, draws attention to certain defects in the sanitary defences of the borough. The insufficiency of the hospital accommodation is brought out by the less favourable returns of hospital mortality, which Dr. Cameron attributes in part to the unhealthy atmosphere of the wards from continuous use. "No ward," he says, "ought to be kept full, night and day, for months together, as was the case with our over-crowded scarlet fever wards last year." There should also be some provision for isolating diphtheria. Notwithstanding its large area, Huddersfield is very much over-crowded in some parts, a great want being tenement houses for the poorest inhabitants. The removal of refuse should be expedited, and some method of sewage purification adopted before a permanent reduction in the death-rate can be looked for, and much might also be done to lessen the potency of certain influences of the staple industry of the place, the manufacture of textile fabrics, as causes of illness. Dr. Cameron reports a considerable amount of sickness during 1888. Small-pox broke out several times, and measles and scarlet fever were very prevalent. The continued prevalence of the last-named disease directed the house inspection chiefly to those quarters in which disease has appeared. The houses in which attacks of the notable diseases occurred were examined and defects dealt with. The systematic house-to-house inspection was, from pressure of the zymotic house inspection work, for most of the year in abeyance.

Insufficiency of hospital.

Over-crowding.

Refuse removal.

Sewage purification.

House inspection.

JARROW (Population, 30,000).—Dr. A. Campbell Munro reports that the death-rate for the year 1888 was the lowest on record, as was also the rate from infectious diseases, while the infantile mortality-rate of only 1 year in the past was as low as that of 1888. The year was an uneventful one, regarded from the sanitary point of view; no burning questions came to the front, and the sanitary administration of the town did not suffer from the lack of them. The year's record is one of prosaic and—regarded in detail—insignificant work. A satisfactory part of Dr. Munro's report is that in which he shows the benefit wrought by the compulsory notification of disease upon the death-rate. As a result of ten years' experience of the working of the Act, there has been a decrease of 17 per cent. in the average rate, and in that from zymotic diseases no less than 45 per cent., whilst the decrease in the fatality from the notifiable diseases constituted 99 per cent. of the total decrease in the zymotic mortality. These results are very satisfactory, and, as Dr. Munro remarks, "they are a sufficient reward to those who have stood faithfully by the system through good and evil report." Dr. Munro refers especially to "the services of the medical men of the borough, who have thrown aside all thought of personal pique, and have acted loyally throughout for the benefit of the people of the town."

Compulsory notification.

MAIDSTONE (Population, 32,384).—Mr. M. A. Adams' annual report for 1888, though favourable as regards vital statistics, does not describe any particular progress in matters concerning the general sanitary condition of the town. An outbreak of diphtheria serves as the text for an able discource on the nature and probable origin of this disease. Its proximate cause being, in Mr. Adams' experience, invariably associated with bad sanitary surroundings, especially bad drainage; he endeavours to impress upon the public the risk of continuing with unflushed house-drains, badly organized refuse disposal, and imperfect sanitary inspection. He instances the outbreak in the Tovil district, where there had been great neglect in regard to flushing the closets, and where, consequently, there were stinking drains and sewers. It was here that the first serious effects of the disease manifested themselves, but the vigorous action taken in dealing with all defects immediately brought the outbreak to an end. That Maidstone enjoys undoubted advantages is exemplified by the fact that the death-rates of 1887 and 1888 were the lowest of all the 78 towns specified by the Registrar-General, and the rates of the previous 10 years show an extraordinary and steady decrease.

Diphtheria.

PEWSEY RURAL (Population, 12,000).—Dr. Thomas Clarke's annual report is brief, but evidences a due attention to sanitary routine. An epidemic of diphtheria and two outbreaks of scarlet fever necessitated energetic action to prevent the spread of disease, and this had a satisfactory result. Inspections were made of parishes, &c., and all the dairies were personally visited by the health officer, numerous improvements being effected. At one dairy farm cases of scarlet fever were met with, and strict precautions were instituted to prevent contamination of the milk supply. There were 208 deaths during the year, being at the rate of 16·51 per 1,000.

Scarlet fever at dairy.

PORTSMOUTH (Population, 139,575).—The more favourable death-rate which Dr. B. H. Mumby was able to record for the year 1888—18·7 per 1,000—the lowest since 1883, was doubtless attributable in part to the coolness of the summer, and the comparative mildness of the autumn months. But he considers that this does not fully explain the decrease in the mortality. Amongst the zymotic class of diseases the deaths were 66 less than the average of the last ten years, of which number the 22

fewer deaths from diarrhœa may no doubt be due to climatic causes, but the remaining 44 were due, Dr. Mumby would fain hope, to the improved sanitary condition of the borough and to the increased vigilance of the officials in preventing the spread of infectious diseases. It is satisfactory to note how the death-rate from the seven chief zymotic diseases has declined since 1851. During the ten years 1851–60 it was 4·95 per 1,000 per annum; during the next ten years 1871–80 it fell to 3·82, and since that time it has again fallen during the eight years 1881–88 to 2·93. This decided improvement in the public health is undoubtedly due in a very great measure to the superior hygienic conditions under which the inhabitants now live. The rate for phthisis or consumption has also improved continuously. The report speaks most favourably of the working of the "Compulsory Notification" Act. By its means a very large number of insanitary houses have been made fit to live in, a great number of children living in infected houses kept away from Board and other schools receiving the Government grant, many cases of infectious diseases occurring to people living in houses totally unsuited for efficient nursing and isolation, have been removed to the Infectious Diseases Hospital, many infected premises efficiently disinfected, and at least one outbreak of infectious disease traced to its source and prevented from attaining large proportions. Dr. Mumby believes that the public of Portsmouth have great reason to be thankful for these clauses.

Compulsory notification system.

Saltley (Population, 7,800).—Mr. W. G. Creswell's report for 1888 is a conscientious record of an uneventful year, but does not present any features of special interest. The routine sanitary work was faithfully carried out, serious epidemic disease being conspicuous by its absence. Measles was very prevalent, and there were some few cases of scarlet fever and diphtheria, all of which received careful attention. The death-rate showed an advance on that of the previous year (15·2 against 14·5 per 1,000), but amongst deaths from preventible causes there was a slight decrease.

Measles.

Spilsby Rural (Population, 25,816).—The prevalence of epidemic disease in this district during 1888 was a cause of considerable anxiety. Dr. Walker gives a very complete account of each outbreak, with the measures adopted for checking the spread of the disease, and also the inquiries made into the origin of cases. An outbreak of small-pox in Alford was most successfully controlled by the acquisition of a temporary hospital, a measure which contributed not only to the stamping out of the disease, but also to the quieting of the fears and anxieties of the inhabitants. This led to the consideration of some permanent provision for the district, which resulted in the building of a movable hospital as best suited to the needs of a wide and sparsely populated area. Not much structural work was accomplished during the year; but in spite of the increased death-rate, 16·6 per 1,000, Dr. Walker regards the general sanitary condition of the towns and villages as fairly satisfactory. Some interest attaches to an outbreak of typhoid fever in the town of Spilsby, which seems to have been connected with the milk supply, although Dr. Walker failed to trace the exact source of contamination.

Small-pox.

Isolation provision.

Permanent hospital provided.

Typhoid and milk.

Tayport Sewerage.—The Commissioners of Tayport near Dundee recently advertised an open competition, and they finally selected a scheme designed by Mr. W. H. Radford, Civil Engineer, of Nottingham, as the most suitable and practicable for the sewerage of their district. The scheme consists of a system of pipe sewers gravitating to two sea outfalls in the Firth of Tay. Advantage is taken of the natural falls of the district, and the sewage can be discharged at all states of the tide. Ample inspection, ventilation, and flushing arrangements are provided. Mr. Radford will be engaged to superintend these works.

QUARTERLY REPORTS OF PUBLIC ANALYSTS.

Birmingham.—Dr. Alfred Hill reports that during the year 1888, 753 samples of food, drink, and drugs, were submitted to him for analysis. Eighty-three were found to be adulterated, the per-centage showing a slight diminution on that of the previous year, having fallen from 12 to 11 per cent. Thirty-three or eighteen per cent. of the milks proved to be adulterated. The adulteration took the usual forms, viz.: addition of water or abstraction of fat. Some of the samples had been tampered with in both these respects. The proportion of sophisticated samples is a little higher than in 1887. Nine of the samples of ale had an excess of salt, five of the peppers contained long pepper, and three of the six samples of coffee were admixtures of that substance with chicory. Of the thirty-five samples purchased as butter, seven were really margarine; two of them were sold as margarine, but were not labelled as such. The whole of the samples of chewing gum contained paraffin wax, as did also six of the 46 samples of sugar confectionery. So many as nine of the fifteen samples of lard contained cotton-seed oil, while the fat in one of the samples of cheese consisted of margarine, and not butter. One of the oatmeals contained barley-meal, while all the samples of bread and flour and other miscellaneous articles submitted to analysis were unadulterated.

Milk.

Ale.

Pepper.

Coffee.

Margarine.

Lard.

St. Matthew, Bethnal Green.—A case is cited by Mr. A. W. Stokes in a report to the vestry of St. Matthew, Bethnal Green, which opens out a new aspect of the possibilities of evading the Adulteration Acts. In purchasing samples of coffee, the word "coffee" only was used, but on examining the packets in which the samples were contained, they were found to contain the notice, "This is sold as a mixture of coffee and chicory." Analysis showed that one contained 50 and the other 60 per cent. of chicory. Now, chicory can be bought for less than a quarter of the price of coffee. The sanitary committee desiring to test whether, by the use of such a label, a vendor could supply, at an additional profit to himself, an article not asked for, directed a summons to be issued against one of the vendors. The case was heard by Mr. Bushby, and was ably presented on behalf of the vestry by Inspector Lapworth. The magistrate, however, ruled that the label was sufficient protection in the case of coffee. This is an unfortunate decision, since it allows coffee vendors to sell as coffee a mixture containing any amount of chicory if only somewhere on the packet are the words "Sold as a mixture." Such packets are frequently covered with advertisements of the other goods of the establishment, so that, without carefully reading through the whole of it, the notice of adulteration may be missed. In the case of children, blind people, and those unable to read, it is absurd to call this a notice. Coffee is the only article in which such a loop-hole for adulteration is tolerated.

"Coffee."

Paddington.—Mr. Alfred W. Stokes reports that of 60 samples of food submitted to him during the quarter ended June 24 last, only seven, all of milk, were found to be adulterated. With one exception the vendors were prosecuted—three successfully—and fines were imposed, but the other cases fell through on account of informality in the mode of summoning. Some samples of tinned meat were found to be pure and wholesome, and were quite free from any metallic salts derived from the tin or solder of the vessels in which they were contained.

Prosecutions.

Tinned meat.

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SURVEYORS' AND SANITARY INSPECTORS' REPORTS.

BIRMINGHAM.—The number of notices served to abate nuisances during 1888 by Mr. Parker, was 15,185, comprising an endless variety. "Drains" were, as usual, a most fertile source of nuisance, whilst dirty houses, filthy privies, &c., also exacted a large amount of attention. A number of samples of well-water were tested and found to be impure, and 48 wells were ordered to be closed. The number of observations made during the year by the three assistant inspectors appointed to watch for and report on any excessive emission of dense smoke from the chimneys of manufactories in the city was 3,822. The discharge of black smoke for longer periods than is allowable was observed on 242 occasions; 179 manufacturers were cautioned not to repeat the offence, and 59 were summoned before the magistrates and mulcted in penalties and costs amounting altogether to £54.

Well-water analysis.

Smoke nuisance.

BRADFORD (Population 229,721).—Mr. Jas. Chambers gives an exhaustive account of the work carried out under his supervision during 1888. It was mainly of a routine character, but very comprehensive and fully up to the average of former years. This is clearly seen by referring to an abstract included in the report of the work of the eight years 1880 to 1888, and it is interesting to note the gradual changes of direction the work has taken. The inspection of houses where infectious diseases occurred is a remarkable instance of this kind, that duty having been undertaken only since 1885. The closing of cellar dwellings may also be cited, the number in 1880 being 124, and in 1888 2 only. It must also be noted, however, that there has been an increase in the cases of over-crowding roported, and that the numbers relating to the cleansing of premises and their surroundings have largely increased. The abolition of privies and ash-pits has been vigorously effected where possible, so that whereas 1,786 were converted or improved in 1880, the number has gradually fallen in recent years, till in 1888 only 334 had to be dealt with. Of 227 samples of food submitted to the borough analyst for analysis, 214 were certified as genuine, the adulterated samples consisting of 4 of milk, 6 of butter, and 1 of whisky.

Cellar dwellings.

Privy nuisances.

Adulteration of food.

JARROW (Population 30,000).—Mr. E. Batey's annual report for 1888 shows that a good deal of attention was given to all the details which make up the sum of sanitary work. A considerable proportion of energy was devoted to controlling the spread of infectious diseases. All infected houses were visited by the inspector, and the occupier of each house visited was served with a notice to disinfect the sick room, together with a printed form of instructions drawn up by the medical officer of health. A great number of the infected houses were also visited during the illness to see that the notices to disinfect, &c., were carried out. Mr. Batey states that in no case were legal proceedings necessary for the enforcement of notices under the Public Health Act. A great improvement is being effected in the substitution of dry ash-closets for insanitary and dilapidated ash-pits.

Inspection of dwellings.

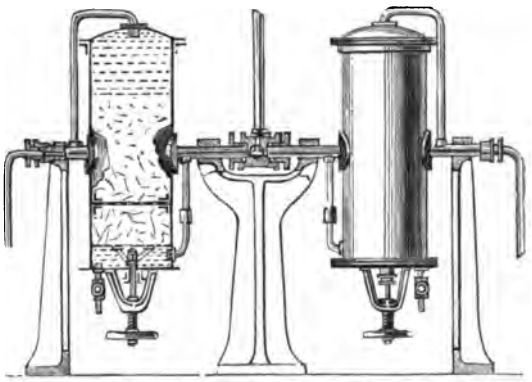
PORTSMOUTH (Population 139,575).—Mr. F. Bell makes a good report for 1888, and shows that considerable vigilance has been exercised in tracing out and dealing with nuisances. There were 517 visits made to the common lodging houses; 2,651 visits were made to the various dairies, cowsheds, and milkshops, and 1,712 visits were made to the different bakehouses. As many as 665 complaints relative to nuisances were made at the office and received attention; 915 rooms were fumigated; 546 drains were tested. Disinfectants were supplied at every house where cases of infectious disease occurred.

ILLUSTRATED SANITARY PATENTS.

15,330. (1888.) IMPROVEMENTS RELATING TO THE FILTRATION OF WATER AND TO APPARATUS THEREFOR. GEORGE DAVID GERSON, Doctor of Philosophy, Hamburg, Germany. [8d.]

This invention relates to improvements in the method of and apparatus for purifying water, and the object of the same is to provide means for continuously purifying water by first separating matters mechanically suspended therein to obtain clear water for industrial purposes, and then converting the latter by means of a second filtration into water suitable for drinking purposes.

The figure shows an elevation of a pair of primary filters partly in section.



The apparatus employed for the primary filtration consists preferably of two or more cylindrical upright vessels carried by trunnions supported on suitable pillar-blocks allowing the filters to be turned in a vertical plane.

The filtering material in these filters consists of sponges preferably impregnated with tannate of iron, forming an insoluble antiseptic precipitate in the pores of the filtering materials, and preventing the development of any organic fermentative germs, placed between two sieves or perforated plate; the lower one being fitted loosely within the vessels, and may be moved up and down in the latter by a screw extending through a stuffing box below the lower end of the vessel for the purpose of pressing the sponges properly together, and to squeeze out the residual impurities detained from the water. This pressing out of the sponges is of great advantage, as the cleansing of the same by properly cleaned water which passes the filtering materials in opposite direction of the flow of the water to be purified will be considerably facilitated. Upon the upper perforated plate may be placed in certain cases layers of pumice stones of different sizes, and previously treated by an insoluble iron salt, such as tannate of iron.

The apparatus to be used for the secondary filtration are essentially of the same construction, with the only difference that the mechanism for pressing the filtering materials is omitted in the secondary cylindrical vessels, only layers of impregnated pumice stones of different granulation being required.

The arrangement of a complete set of filters as employed for continuous working consists in placing the secondary filters beneath the primary filters, and the water to be treated is forced by a proper pressure up through the primary filters then down pipes on the outside and up through the secondary filters whence it is conducted to a reservoir or supply tap.

There are contrivances to facilitate the proper cleansing of the filtering agents, and for drawing off water at intermediate stages, and various modifications and developments of the various parts of the apparatus generally described above, which we cannot here more particularly detail,

Claim.—The filtering apparatus as particularly described and illustrated in the specification quoted

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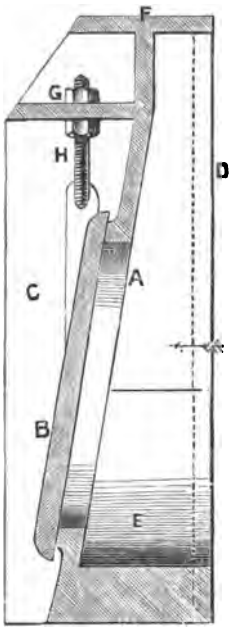
10,979. (1889.) Improvements in Flap Valves for Sewers or Drains. Henry Munday, Major H.A.C., 23, Oakley Square, and Henry Walker, 15, Henrietta Mews, Brunswick Square, London. [6d.]

This invention relates to the construction of a flap valve for sewers and drains that shall be more easily repaired or replaced by new than the flap valves now in general use, which are hinged to the facing of the drain itself.



The figure shows a flap valve and seating according to this invention, in vertical section. The frame is a casting made with an inclined facing A, with a circular hole through it covered by the flap. On each side of the facing is a projecting rib C, with a flange D at each side, so that when the frame is built into the brickwork it is firmly held. At the back of the facing A there is a semi-cylindrical seating E to receive the end of the sewer or drain pipe which abuts against the facing.

Above the facing a recess is formed between two horizontal ribs F and G, this recess being large enough to admit a wrench for screwing up nuts on the hinge bolts H.

If the bolts become slack, as they are apt to do, access to them for tightening up is readily obtained, or new bolts can be inserted.

Claim.—In the seating frame of a sewer flap valve for a sewer or drain, forming a recess between two horizontal ribs to give access to the nuts of the hinge bolts, as described.

11,660. (1889.) Process for Producing Hard Soap from Vegetable or Animal Fats, or a Mixture thereof, and Caustic Alkaline Solutions without Employing Carbonates of Alkalis or Chloride of Natrium. Heinrich Schuster, Leudsiedel, Germany.

The said process consists in first mixing a suitable quantity—for instance, 100 kilogrammes of vegetable or animal fats, or of a mixture of both fats, with the same quantity in weight of a purely caustic alkaline solution of high percentage—not below 35 Beaumé, without any addition of carbonate of alkalis. By slow intermissive heating of the mixture obtained, and spontaneous heating thereof, the fats within a few hours are completely saponified with the alkaline solutions of high percentage, and a hard solution is produced without the addition of salt.

Claim.—The process described above.

12,303. (1889.) An Improved Portable Shower Bath or Shampooing Douche. Henry John Garbutt, 22, Younge Park, Holloway, London. [6d.]

The object of this invention is to provide means for raising a large volume of water above the head and discharging it in the form of a shower or douche, which shall be much more efficient and complete than the sponge, or small vessels that are now used to obtain this end.

The invention consists in forming a receptacle of thin metal, such as tin or similar material, to hold about one gallon of water. This receptacle is fitted at the bottom with a valve which, when open, allows the water to escape through a rose, which distributes it after the manner of a shower.

Two handles are provided to raise this receptacle over the head of the person desiring to use the same, and a lever attachment is fitted to the valve so that this can be easily opened by the finger or thumb of the person using the apparatus at the time he is holding it over his head.

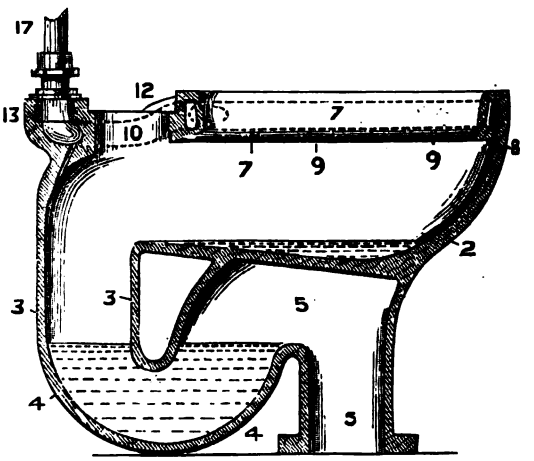
The action of this apparatus will readily be understood from the figure without further explanation.

A ring or rest is formed on the underside of the receptacle, which rests on the head of the person using the bath, so as to relieve his arms of some of the weight.

Claim.—A portable shower bath or shampooing douche as described.

12,457. (1889.) Improvements in Water-Closets. William Bunting, jun., Brooklyn, New York, U.S.A. [8d.]

This invention relates more particularly to that class of water-closets known as the "Bostel" patent closets. The figure represents a section of the apparatus.



The water-closet is made of a single piece of porcelain or earthenware, and consists primarily of a bowl or basin 2, a vertical trunk or chamber 3, a trap 4, and an outlet 5. The bottom of the bowl is made dishing to hold a small quantity of water at all times; and the top of the bowl is provided with a flushing rim 7, having a slot 8 at the front of the bowl, and a series of perforations 9 around each side of the bowl for the discharge of the flushing water.

The trunk is located at the rear of the closet, and about centrally of the bowl. It is curved and bent forward slightly at its upper end, and is formed with an opening 10, through which access may be obtained to the trunk or trap, and through which these portions may be ventilated.

Formed integral with the bowl and the upper portion of the trunk are conduits 12, which pass on either side of the opening 10, and connect to the vertical inlet 13. The forward ends of these conduits communicate with the flushing rim 7 on each side of the centre at the rear of the bowl. All the foregoing is constructed in one piece, thus saving the cost of bends and metal fixings for supply pipes, &c.

When the flushing of the closet is put into operation, the water rushes down the supply pipe 17, through the conduits 12–12, and round the rim 7, issuing with considerable force from the valve 8, and also from the perforations 9 round the sides of the bowl, thus effecting a complete cleansing of the bowl all round, and a specially forcible flow of water from the front of the bowl to the trap and waste at the rear, which causes the closet bowl to be emptied and cleansed with great rapidity and efficiency.

Claim.—In a water-closet having a bowl provided with a flushing rim and a trunk, two rearwardly projecting conduits formed integral or of a piece with the bowl and

trunk, communicating with the flushing rim on opposite sides, &c., as described.

12,801. (1889.) AN IMPROVED BALL OR FLOAT CISTERN VALVE. RICHARD MILL, 5, Val Plaisant, Jersey. [6d.]

This invention relates to that class of ball or float cistern valves in which the water is admitted to the reservoir or tank by the fall of the float or ball, and the supply or passage of the water stopped—on the ascent of the float—by virtue of the pressure of the service water contained within the supply pipes from the main forcing the valve which regulates the admission of the water securely down on its seating.

The drop valve is situated within a cylinder or pipe communicating with the service main, and the said valve is acted upon by the free end of a lever, the other end of which is attached to a ball or float on the surface of the water within the cistern. When the water sinks in the cistern the ball or float falls, forcing up the free end of the lever and thus raising the drop valve which then admits water into the cistern until it rises sufficiently to take the weight of the float when the valve closes again by virtue of the weight or pressure of the water in the service main. Thus it will be easily seen the pressure of water in the service main materially assists in closing the valve and aiding the action of the float or ball.

Claim.—The contrivance in which the pressure of service water closes the inlet orifice, in combination with the various parts as described in the specification quoted.

LIST OF APPLICATIONS FOR PATENTS

RELATING TO SANITATION.

FROM OCT. 1, 1889, TO OCT. 24, 1889.

[*This List is specially compiled for the* SANITARY RECORD *by Messrs. Rayner & Cassell, Patent Agents, 37, Chancery Lane, Holborn, from whom all further information relating to Patents may be had on application, gratuitously.*]

October 1.—No. 15,419. GEO. WALLER, 58, Park Street, Southwark. An air-tight door or cover for drains, manholes, inspection shafts, &c.

October 4.—No. 15,584. JAS. MILLAR MARTIN, 120, South Buck, Canongate, Edinburgh. An improved steam washing-machine.

No. 15,585. JOSEPH EASBY, 161, Spring Vale Road, Sheffield, Yorks. An improved automatic apparatus for dry-closets and water-closets.

No. 15,600. OSCAR BELLAMY, 7, Renfrew Terrace, Nunhead Lane, Peckham Rye. Improvements in dust-bins and for providing sanitation thereof, to be called "The Real Sanitary Dust-Bin."

No. 15,646. SAMUEL WATKIN CARLTON, 46, Lincoln's Inn Fields, London. House refuse destructor for such as vegetable, fish, and other substances.

October 7.—No. 15,684. EDWIN WHITAKER, 8, Quality Court, London. Improved stench and draught preventor for sink pipes.

October 8.—No. 15,764. WHIFFIN MONTAGUE, 10, Falcon Avenue, Aldersgate Street. A safety sanitary towel-suspender and stocking suspender combined.

October 14.—No. 16,160. EMILE LEON THEOPHILE CARON, JULIUS FERDINAND STANISLAUS CARON & AMELIE ELIZA PAULINE CARON, Gray's Inn Chambers, 20, High Holborn, London. Improvements relating to washing-machines.

October 16.—No. 16,283. THOMAS ALLEN BULLOUGH, 6, Lord Street, Liverpool. Improvements in or appertaining to filters for filtering sludge and other semi-liquid matter.

No. 16,326. ERNEST SMITH, 9 & 10, Southampton Buildings, London. Improvements in apparatus for making earthenware socket-pipes.

October 17.—No. 16,347. GEORGE HERSCHELL & FREDK. WALLACE KITTO, 5, West Street, Finsbury Circus. Improvements in the manufacture of soap tablets.

No. 16,369. JAMES ORCHARDSON, 15, Water Street, Liverpool. Improved means of, and apparatus to be used for disinfecting and for destroying vermin and like purposes.

No. 16,364. JOHN BELL MILLAR, Sun Foundry, Glasgow. Rendering urinal plates incapable of being written upon.

October 18.—No. 16,499. RICHARD CHARLES GERVILLE, 45, Southampton Buildings, London. Improvements in and relating to filtering apparatus.

October 23.—No. 16,708. CARL BASWITZ, 34, Southampton Buildings, London. Improvements in the treatment of textiles, by means of copper and ammonia, for the purpose of making them waterproof and uninflammable.

No. 16,720. WILLIAM DUNDAS SCOTT-MONCRIEFF, 86, Newman Street, London. Improvements in or relating to syphon-cisterns for flushing purposes.

No. 16,746. GEORGE WHITE THOMAS, 7, Staple Inn, Middlesex, An improved filter.

October 24.—No. 16,768. HENRY JAMES WILSON, 130, Queen's Road, Hastings. The "Thorough" ventilation of hats.

No. 16,831. WILLIAM COWAN, Buccleuch Street Works, Edinburgh. Improvements in flushing cisterns and other vessels for discharging water.

No. 16,957. EDWIN WHITAKER, 8, Quality Court, London. Improvements in dish-plates and in water-closet apparatus.

SPECIFICATIONS PUBLISHED.—1888.

17,042. TWEEDIE. Disinfectant. 4d.
17,422. UTLEY. Ventilators. 2s.
17,440. WASDELL. Syphon flushing cisterns. 8d.
18,177. GREGORY & MCDONALD. Filtering material. 4d.
15,330. GERSON. Filtering water. 8d.
15,994. KINGZETT. Antiseptics, &c. 4d.
14,108. CLARK & OTHERS. Treating sewage. 1s. 1d.

The above Specifications may be had from Messrs. Rayner & Cassell, Patent Agents, 37, Chancery Lane, at the prices quoted.

NEW INVENTIONS.

DR. DETTWEILER'S POCKET FLASK FOR THE DISPOSAL OF THE SPUTA IN PHTHISIS.

THE accompanying illustrations represent a small flask devised by Dr. Dettweiler, of Frankenstein, which he suggests every consumptive person should carry and always expectorate into, instead of depositing the sputa into handkerchiefs, or on the pavement of the streets, on the floor of rooms, railway carriages, &c. It is thus hoped that the great danger of infection arising from dried sputa when inhaled as dust will be minimised.

Flask closed.

Section of same, open.

The small apparatus is constructed on the principle of the safe ink-bottle, and is furnished with a closely-fitting spring lid at one end, and a screw-off mount for emptying at the other. Its contents may be disinfected by a solution of perchloride of mercury (1 to 200). The flask can be conveniently carried by male patients in the breast pockets of their coats, but is too large for females unless kept in a hand-bag or basket. A larger lower aperture would be an improvement, but, on the whole, it is an ingenious and handy contrivance to meet a great want.

Messrs. Krohne and Sesemann, of 8, Duke Street, Manchester Square, London, are the agents.

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REVIEWS.

The Human Foot; its Form and Structure, Functions and Clothing. By T. S. Ellis, Consulting Surgeon to the General Infirmary at Gloucester. J. & A. Churchill, pp. 150.

No apology is required for the appearance of this careful essay. But the author adduces proof of a want, in the fact that the City and Guilds of London Institute for the Advancement of Technical Education (to quote the awkward title of a valuable institution), includes amongst its subjects for examination the anatomy and physiology of the foot, yet that in this subject alone it suggests no book of reference. Mr. Ellis has special qualifications, arising out of a severe accident to his own foot, which occurred many years ago, and which first directed his attention to the subject. An important outcome of this experience was the discovery, which he claims, of a better method of treating flat-foot, chiefly by the adoption of suitable muscular exercises, an improvement akin to that which in lateral curvature of the spine, substitutes muscular exercises for mechanical support.

The book is, however, far from being a systematic treatise, and cannot claim to serve as a text-book. Except that it is prefaced by a lucid elementary account of the anatomy of the foot, it contains no attempt at a division of subjects, and is presumably intended to be studied as a whole. Partly for this reason, it would certainly give even to technical students somewhat hard reading, notwithstanding its excellent type and abundant illustrations.

The author, full of original thought, has special views in regard to the relation of the feet to the erect posture, and these he applies to walking and standing, as practised alike in civil and military life, as well as to the prolonged standing of persons whose occupations call for it. He deprecates all degrees of the ordinary or "military" attitude, viz. with the toes turned outwards, and in this reluctantly disagrees with the late Dr. Parkes. Here, and throughout the book, he usefully insists on the essential fact that in normal feet the great toe on its inner side preserves a straight line continued from the heel, whilst the chief line of action in the foot, described after Professor Meyer, of Zurich, as "Meyer's line," passes from the centre of the heel through the mesial line of the great toe. In standing, the best position, Mr. Ellis believes, is that in which the inner sides of the two feet are parallel, the arch thus holding its "strong" position, and the muscles of the feet acting to the best advantage. This, he calls the "four square position." He compares it to that of a tower, and quotes the words of the poet, "a tower four-square to every wind of Heaven." Similarly in walking, the "four-square position should be maintained;" thus each foot, as placed in firm position at every step, is ready to be lifted at the next step along a line in which the muscles of the foot can act most advantageously upon the great toe.

Now it may be admitted that in the "four-square" position the muscles of the first toe can act at greater advantage. But Mr. Ellis does not appear to deal with Parkes' opinion that the action of more massive muscles, viz. those of the thigh, is advantageously associated with a partly everted position of the foot. The author's special experience has led him to concentrate attention on the comparatively diminutive muscles of the foot itself. The non-medical reader or high-class mechanic, to whom the book is largely directed, might indeed rise from its perusal with the impression that the great muscles of the thigh, pelvis, and back had an inferior share in locomotion as compared with those of the foot.

Further, in his careful consideration of the foot-muscles, the author appears to minimize the mechanical conditions which, apart from muscular action, give stability to the erect posture alike in standing and walking. For instance, while in parts of the book he admits the value, for support, of the arch of the foot, on another page, speaking of this structure, which is surely Nature's type of a leading form in architecture, serving for stability, he puzzles us by stating that the leading use of the arch is to afford protection to the muscles, nerves, veins, &c. In like manner, the use of an extended base in standing and walking appears to receive but little attention in the book before us, although it is admitted that in fatigue, separation and eversion of the feet is naturally resorted to.

The position of the feet in the military attitude of "attention" is acknowledged by Dr. Parkes to be fatiguing when prolonged, their eversion at the angle of 60° being excessive, and the heels being too near together. But this abuse being admitted, it must surely be difficult to deny that due and proper extension of the base leads to stability and economy of muscular force, whether the body be so placed that its weight temporarily rests on one foot or on both acting in combination. The principle of this extended base is well marked in the feet of other bipeds than man, as when birds actually sleep on a single expanded foot. It appears in the lateral expansion of the toes when the human foot is pressed upon the ground. And this latter advantage is favoured by the interesting fact which the author himself, in connection with another part of the subject, justly adduces, viz. that all the digits radiate from a point in the centre of the heel. (Yet, according to his ever-present "muscular" view, the use of the smaller toes is to serve for active muscular pressure upon the ground.) Expansion of the base is further increased by moderate separation of the legs, and still more by wide separation as instinctively practised on board a ship tossing at sea. A still further adaptation of the same principle is seen when old and feeble or maimed persons use either one or two sticks in walking.

On the other hand, Mr. Ellis's comparison of the posture which he advocates to "a tower four-square" is surely a singular one. In the case of the human figure, his imaginary tower must of necessity be narrower at its base than at its upper part. This is certainly not the ordinary structure of any strong tower of the architect; compare the modern Eiffel Tower, or the more ancient lighthouse of the Eddystone type, whose structure widens to its base and then again into the rock, or notice the mature tree, whose trunk widens to the ground and further into the roots beneath. But the tower with narrow base might be rather compared to the skittle, purposely devised for toppling over. The less the mechanical advantage of a given posture, the greater must be the muscular effort required to sustain it. There are probably feet in which it may be desirable to promote muscular action, rather than seek ease in mere mechanical stability. But the author does not appear to prove that such cases can be taken as creating a rule. It is much easier to appreciate his advice that persons liable to prolonged standing should "frequently tighten the tie-rods by springing gently on tip-toe."

As pathology ever illustrates physiology, locomotor ataxy furnishes a very apt opportunity of comparing the relative stability under exceptional difficulties of a "four-square" position, and of a more exended one. In this disease, diminution of the muscular sense renders the patient especially dependent on mechanical non-muscular stability in standing and walking. An effective test of his inability, is to place him with the two feet parallel, somewhat, in fact, as in Mr. Ellis's "four-square" position. In this attitude his readiness to topple over, actually furnishes an essential point in diagnosis, and on the other hand a widely-extended position with the legs apart is that which he instinctively adopts for security.

The author's views are the result of so much careful study that they may claim earnest attention. Meantime, probably few competent readers of the book will be ready to admit that his arguments have thus far proved his points. He has adduced no comparative experience of any groups of persons adopting his own and the prevalent method. Such evidence is desirable in support of novel views with a proposed new departure.

In the matter of foot-clothing, Mr. Ellis strenuously insists on the need for reform of ordinary boots and

stockings, which incline the great toe inwards, crowd up the smaller toes, and prevent normal expansion. It is an essential condition that the inner edge of the foot-covering should be straight. Even if the boot be properly shaped, the ordinary pattern of stocking or sock is sufficient, at least in the case of broad-toed persons, to prevent free action of the toes.

The advantage in the way of ventilation claimed by the author, for woollen materials as the fabric of stockings and socks, is, when they are covered by leather, scarcely plain. In not a few persons prone to perspire, these woollen articles worn within leather, are commonly found damp and clammy. In usefully insisting on the value of permeating clothing with fresh air, Mr. Ellis mentions the case of an eminent military officer who kept his very slender supply of socks either in wear or hanging outside his tent, and who thus, in campaigning life, avoided the need for washing. With sufficient fresh air, says the author, it is even possible partly to dispense with the laundress. The animal matter is oxidized, and the mineral particles can be shaken out. This novel suggestion at least serves to emphasize the importance of ventilation in clothing.

The author deduces obvious pleasure from incursions within those inner regions of nature where she tells her listeners the secrets of her methods. The entire book is rich in original suggestion, and will repay careful perusal.

An Inquiry into the Causes of the Excessive Mortality in No. 1 District, Ancoats. Read at a meeting of the Manchester and Salford Sanitary Association, by JOHN C. THRESH, M.B.Vic., D.Sc.Lond.

THIS district has a population of about 4,500. In 1887 its death-rate was 55·2 per 1,000; in 1888 its death-rate was 48·7 per 1,000, whilst in the courts of the district the death-rate exceeded 80 per 1,000, and in one street was actually over 90 per 1,000. These facts determined Dr. Thresh to make an inquiry into the causes of the excessive mortality, and his report is a model of what such inquiries should be. The care and moderation of statement, the detail and thoroughness of scope, should go far to bring home to the minds of the Corporation and public of Manchester that the general high death-rate of their city is due to specific and assignable causes, one of which, at least, is the presence in their midst of such plague spots as No. 1 District, Ancoats.

Dr. Thresh's inquiry brings to light the causes of the high mortality in this district, causes with which we are only too familiar. There are no breathing spaces, no straight, wide thoroughfares; on the contrary, every available plot of ground is built upon, and the streets are narrow, short, and crooked. The most densely populated portion is so hemmed in by factories and business premises that a free circulation of air is almost impossible, and the smoke from the houses and works, and the effluvia from closets and yards, pollute the stagnant air. The subsoil is of clay, with most of the houses resting almost directly upon it, causing them to be cold and damp, and accounting for the prevalence of so much phthisis, bronchitis, and rheumatism. The district is nearly level, and the drainage most defective, many of the sewers being blocked with fœtid deposits. The grids and house drains are so often blocked that the yards become saturated with slops, and the moisture gradually makes its way to, and penetrates, the walls and floors of the houses. The houses themselves are of the oldest and worst description, most of them without a single redeeming feature. The rooms are low, dark, and vermin-infested, the walls saturated with the fœtid products of respiration and perspiration. The dry ash closets were found to be a most unmitigated nuisance, filthy and overflowing. The property generally is very dilapidated, and the houses crowded together into blocks surrounded by narrow streets, and surrounding still narrower courts. The population in some of the blocks is very dense, and there is much overcrowding, the cubic space per head in the living and bed-rooms being miserably inadequate. There are many back-to-back houses in the district, but Dr. Thresh found these usually in a better state of repair than the "through" houses, whose fronts often seemed in fair condition whilst the backs and yards were in a most decayed and dilapidated state. The want of ventilation, however, in the back-to-back houses, as influencing the health of the inmates, is evidenced, by the higher death-rate. Whereas the death-rate of the inhabitants of the "through" houses was 47·5 per 1,000, the death-rate of those living in the back-to-back houses of the district was 58·8 per 1,000.

The sanitary inspection of this district (which we hope, for the credit of Manchester, is the very worst in the city) can be nothing more than nominal. Indeed, Dr. Thresh says, "in all our investigations in the Ancoats districts, though we have frequently met the inspectors in the leading thoroughfares, and have seen them evince a good deal of curiosity as to our movements, we have never on any occasion had the pleasure of meeting one in any of the filthy passages or courts."

It is quite evident that nothing short of wholesale demolition of the property in this abandoned slum will meet the urgent necessities of the case.

Twelfth Annual Report of the Board of Health of the State of New Jersey, U.S., with Report of the Bureau of Vital Statistics, 1888.

WITHIN the compass of a volume of 500 pages we have the annual report of the Board, a report upon the social and sanitary relations of the charitable and penal institutions of the State, which come within the purview of the Board, a series of papers upon current sanitary topics, and the annual report of the bureau of vital statistics. The most prominent event of the year was the transference of the bureau of vital statistics and registration department from the domain of the Secretary of State to that of the Board of Health. This more intimate association of the sanitary and registration departments is manifestly proper, and will enable the Board in the future still more vigorously and effectively to study the great health problems which have so much influence over the social condition and happiness of the people. The year is noticed as one of fair healthfulness in the State, and the Board very justly remarks that, with the rapid increase of the population, especially in urban districts, the prevention of an increase in the death-rate is in itself something of an achievement. The year was marked by no special epidemic or endemic prevalence of disease. The deaths from malarial fever amounted to 264, which, however, was 25 under the average of the last ten years; a further and much greater improvement is anticipated when the remedial influence of the removal of various dams, and the drainage of certain malarious districts, shall have had time to operate. There were only 5 deaths from small-pox, as compared with an average of 71 in the preceding ten years; this gratifying decrease is attributed in great measure to the increased attention paid to vaccination, and the greater care exercised by school boards in excluding unvaccinated children from school attendance —a method of procedure which acts as a tolerably effective substitute in the States for our system of compulsory vaccination. The deaths from scarlet fever, measles, and whooping-cough were respectively 574, 74, and 161; but no fewer than 2,036 deaths were ascribed to diphtheria. In this connection there is quoted an interesting analysis of the conditions and relations of 196 outbreaks of diphtheria, which were inquired into by the State Board of Michigan, from which it appears that in the case of 118 outbreaks in which isolation or disinfection or both were neglected, there occurred, on an average, 11·8 cases per outbreak, attended by an average of 2·7 deaths, while in the case of 78 outbreaks in which both isolation and disinfection were attempted, the average number of cases per outbreak was only 2·5, with ·6 deaths. Among the more outstanding features of the year the Board reports the more complete organization of local boards of health,

and it is remarked that, while the educational work of the Board, to which so much of its energy has been devoted in the past, will never cease, the great work of the future will be the pressing forward of more efficient local administration.

The devolution of legislative powers to the State Legislatures in the United States renders possible an attention to sanitary legislation which is calculated to awake the envy of sanitary reformers in this country. Thus, no fewer than seventeen health laws and amending Acts were passed by the State Legislature of New Jersey in the session 1888. These dealt, among other matters, with the re-organization of the bureau of vital statistics, the regulation of the ice supplies of the State, the drainage of waste lands, water supply, sewerage, and the registration of medical practitioners. Two very interesting circulars are incorporated in the report of the Board. The first deals with the duties of undertakers, more particularly in respect of infectious cases. The Board remarks that "the last ten years have developed possibilities of care for the dead wholly new and greatly valuable. We believe the time not distant when the occupation will be followed as an exact sanitary art, and become a great adjunct in the checking of contagious diseases. . . . The spray forms of syringes, trocar, sponges, carbolized paper and cotton, bandages, wadding, two or three of the most approved disinfectants, all put up in a case of convenient form, belong as much to his art as does the medical case to the physician." The circular deals with the disinfection of the surface of the body, of orifices from which discharges issue, of the hair, and also with the use of powdered charcoal in coffins. The second circular furnishes a code of model bye-laws for the registration of plumber work, which requires the registration of plumbers at the offices of local boards of health, the deposit of detailed plans and specifications of the plumbing and drainage work of all new buildings before the work is begun, the use of heavy cast-iron piping, caulked with lead, in the case of drains laid in made ground, the cementing of the joints of all earthenware drainage pipes, and various details all upon the lines of the most advanced sanitary engineering of the day.

Altogether the report furnishes evidence that, if somewhat late in entering the field, as was natural in the case of a relatively sparsely populated country, our American brethren are determined not to be last in the race.

Agricultural Distress and Trade Depression. Their Remedy in the Commercial Realization of Home-Grown Produce. By D. Tallerman. With maps and illustrations. The Commercial and Agricultural Co-operative Society, Limited, 20, Great St. Helens, E.C., 1889. Demy 8vo., pp. 571.

This important work is put forth by the author as an epitome of fifty years' commercial experience, gathered in all parts of the world. It abounds in good advice to the producer and consumer, and if this be carefully considered and acted upon no doubt many of the advantages pointed out will be speedily realised. There is no pretention to literary style, but the book is written throughout in a simple plain way, and will be easily understood even by the British farmer, to whom a considerable proportion is mainly addressed. The method of the author is first to arouse the interest of home producers by some startling proposition, and then endeavour to induce them to alter the course they are pursuing and steer one calculated to bring prosperity back. Thus the following statements are made by way of arresting the reader's attention:—

1. The national productions of both animal and cereal foods are considerably less than they were a few years ago.

2. The home producers are being successfully driven from their own markets by the farmers of remote countries, who are handicapped by dear labour and heavy transit charges.

3. With the wholesale cost of foods at a nominal price, a considerable portion of the people are poorly fed, and their natural physique deteriorating.

4. A section of the industrial classes send agents abroad to purchase commodities from foreign farmers at higher prices than would suffice for the production of better goods at home. All these, proof of which is not wanting, are traceable to one simple cause, viz., the disorganization of our farmers. They are thus, according to Mr. Tallerman, capable of prompt and speedy removal. When the farmer becomes alive to his position and acts in accordance with the dictates of common sense, anomalies such as those just stated will cease, and so will agricultural distress.

"Anomaly" is a favourite word with the author. Gifted as he undoubtedly is with an eye to see the possibilities of agricultural and commercial progress in all directions, the realities presented to his intelligence all strike him as anomalies. He directs attention to the London markets, insisting specially on their inadequacy. The greatest city in the world possesses but few more food markets now than it had two or three centuries since. Surely, this is an anomaly? And forthwith the author proceeds to show what the London markets might be. In the London dead meat market and live cattle market the author sees two more anomalies. Then he turns to the Irish cattle trade, indicating defects and making suggestions. Next he discusses live-stock preparation, and shows how the waste in offal entails losses on farmers. On "boiling joints" he has a word of warning for the housewife. Calculating that a carcase of 800 lbs. yields 500 lbs. of roasting and best joints, saleable at a high price, varying from 9d. to 1s. per lb. retail, there remains 300 lbs. boiling joints, consisting principally of forequarter and belly meat, and the prices the public are called upon to pay for this is, we are told, in many instances treble its original wholesale cost. The waste of "bone material" and shrinkage is referred to, and the food waste resulting from the practice of converting portions of each animal into some product not food. The waste from preventable disease, indiscriminate sale, selling goods in bulk, and "unutilized securities" are all considered in turn. Then imported and home-grown wheats and flours are compared, and white and whole-meal bread. There is sound advice on cheese and butter making, milk collecting and distribution, as well as on fruit-growing and industrial co-operation.

Where home-grown foods are produced and how they they are wasted is fully gone into; and the foreign systems of distribution are explained, showing how good organization and scientific and practical arrangements enable foreign produce to displace home-grown produce in British markets. The farmer is then shown the results of combination, and how to compete successfully with foreign producers. There are also some excellent chapters on simple book-keeping, economy in production, working-class requirements, and the way to deal with the railway difficulty.

The section of the book on food preparation and distribution is of exceptional interest, containing chapters on working-man's meals, children's dinners, and economical cooking. The book closes with an article on the Imperial Institute and home industries.

We have seldom perused a more interesting and instructive volume. We defy anyone to read it without gaining information. In almost every portion the reader feels that he is being taught by one who has studied his subject carefully, knows what he is writing about, and knows there is no wrong without a remedy.

The book is excellently printed and well got up throughout.

The Sanitary State of Whitstable.—Unfounded reports have been circulated as to the sanitary state of Whitstable, but we are able to state, on the authority of the local medical officer, that the town still maintains its usual healthy condition, not a single case of zymotic disease having come to his knowledge.

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NOTES ON BOOKS.

Munich, a Healthy Town. Two reports by Profs. v. PETTENKOFER and v. ZIEMSSEN. Reprinted (in English) from the *Münchener neueste Nachr.* 1889.

THIS is not a mere attempt to whitewash the reputation of the Bavarian capital. Prof. Pettenkofer frankly admits that it was formerly a fever den, but he shows that the remarkable reduction in the death-rate, especially in that from enteric fever, has raised it to the position of one of the healthiest cities of the Empire.

The point of his argument, however, of which the ostensible subject is but an illustration, is to demonstrate the direct relation subsisting between pollution of the soil and the endemic or epidemic prevalence of enteric fever. Though, as he calls himself, a "pure water fanatic," he cannot accept the "drinking water theory" as sufficient. He does not deny that instances of its propagation by this means do, from time to time, occur; but in Munich, where the co-existence of suspicious and unimpeachable water supplies, side by side, presented all the requisite conditions for observation, not the slightest relation in time or space can be detected between them and the presence or absence of fever; or if at one time suggested, its fallacy is exhibited at another. The remarkable periodicity, with septennial maxima of deaths corresponding with the rise of the ground water, he has long pointed out; not that the ground water is a *vera causa*, but that it calls into activity the organisms with which the soil is charged. From 1858 to 1886, these septennial maxima of enteric mortality have been 334, 247, 240, 109, and 21 per 100,000 population; if, indeed, the last can be accounted as one.

All cesspits were made water-tight in 1860, and private slaughter-houses were abolished in 1878, but the real improvement only began in 1876, the sewage-sodden soil having required some 15 years for the exhaustion of the organic matter. Sewers begun in 1858, were recommenced on a new plan in 1881, and will soon be complete in every part of the city. To these measures, and these alone, the reduction of the enteric mortality to one-tenth or one-twentieth, and its probable extinction, can be attributed; for "the Pettenkofer waterworks came too early, and the Highland conduit too late, to serve the drinking-water theory, while the undiminished and unaltered consumption of the water of the old Royal conduits laughs it to scorn."

A New Illustrated Catalogue of Sanitary Ware.

AMONGST the various efforts that have been made to induce people to give necessary attention to the sanitary condition of their homes, not the least conspicuous are those of the manufacturers who have turned their attention to producing such artistic and attractive designs in sanitary ware as are depicted in the new catalogue of Mr. T. W. Twyford, of Hanley. In turning over its pages, which are devoted to every description of lavatory basins, butlers' and slop sinks, urinals, water-closets, &c., it is impossible not to be struck with the rapid progress that has been made in this kind of ware, both as regards design and efficiency of construction as well as economy of production. And when one's mind reverts to the times, only too recent, when abominations, that seemed to be constructed to facilitate corrosion and to retain impurities, did duty for water-closets, and any ill-designed or badly-constructed vessel was thought good enough for a urinal or lavatory, one feels that the means of attaining a perfect sanitary condition, either in private dwellings or public institutions, has been rendered not only possible but easy, efficient, and, it may even be said, attractive.

Great care and pains appear to have been taken in the execution of the illustrations, which are printed in the various colours and with the gilt ornamentations exactly like the goods produced, so that buyers may safely give their orders from the book without fear of disappointment.

Annual Report of the Manchester and Salford Sanitary Association, and of the Committees of its Affiliated Societies (1888).

The valuable work that can be accomplished by bands of voluntary workers for the public weal in our large cities is plainly exemplified in the pages of this Report. Indirectly, in securing attention to sanitary mismanagement, and in educating public opinion on the necessity of sanitary reforms, the good influences brought to bear by the Association must be no less important than its more active and direct interventions in municipal matters. The death-rate of Manchester may be abnormally high, but it certainly appears as if the Sanitary Association would ultimately win in its fight against disease and death, and every citizen of Manchester and Salford has it in his power to materially shorten the period of waiting for this happy event by contributing to the funds of the Association, and so helping to increase the activity of its operations.

The committees of the affiliated societies are engaged in no less useful work than the main body. To reduce the volumes of black smoke and the pungency of the noxious vapours that are daily poured into the atmosphere of the town is a task of much difficulty, of which the accomplishment would go far to render life in a manufacturing town less gloomy and more healthy than is now the case. The securing of open spaces for recreation is also a most laudable object, but we feel inclined to think that the abatement of the smoke nuisance should go before the provision of public gardens and squares, otherwise the latter will be only of doubtful benefit, and most people would prefer to escape at once, when at liberty to do so, from the smoke and soot-laden atmosphere into the purer air outside the city's bounds.

LAW REPORTS.

SUPREME COURT OF JUDICATURE.

COURT OF APPEAL.

(*Before the* MASTER *of the* ROLLS, LORD JUSTICE LINDLEY, *and* LORD JUSTICE LOPES.)

HORNSEY LOCAL BOARD *v.* MONARCH INVESTMENT BUILDING SOCIETY.

This was an appeal from the decision of a Divisional Court, consisting of Mr. Justice Mathew and Mr. Justice Grantham. In 1875 the Hornsey Local Board, in pursuance of the Public Health Act, 1848, completed certain paving works in respect of premises of which the defendants subsequently became owners. In 1885 the expenses so incurred were apportioned, and notice of the apportionment was served on the defendants in 1886, and demand made in 1887. The present action to recover the amount of the apportionment was commenced in the County Court in 1888, when judgment was given for the local board, and a declaration made that the expenses incurred were a charge upon the premises, which were accordingly directed to be sold. The Divisional Court set this aside on the ground that the expenses became a charge upon the premises at the date at which they were incurred, and therefore that the defendants were protected by the operation of the Statute of Limitations. The local board appealed. By the Local Government Act, 1858, section 62, when a local board have incurred expenses for the repayment whereof the owner of the premises in respect of which the same are incurred is made liable by the Public Health Act, 1848, such expenses shall be a charge on the premises in respect of which they were incurred. By the Real Property Limitation Act, 1874, section 8, it is provided that no action or other proceedings shall be brought to recover any sum charged upon or payable out of any land but within twelve years next after a right to receive the same shall have accrued to some person capable of giving a discharge for or release of the same.

Mr. Shiress Will, Q.C., and Mr. Macmorran argued

for the appellants; and Mr. Henn Collins, Q.C., and Mr. Montague Lush for the respondents.

The COURT took time to consider the question, and on November 7 delivered judgment, dismissing the appeal.

The MASTER OF THE ROLLS said that the case had been extremely well argued, and raised an undoubtedly important question. The point to be decided was whether the action of the local board was barred by the Statute of Limitations. It had been decided by the Court of Appeal, in the case of the "Tottenham Local Board" (15 Ch. D., 392), that the charge took effect on the land the moment that the works were completed by the local board. That was in this case in 1875, and more than twelve years afterwards the local board brought the present action. The question, therefore, turned on the construction to be given to section 8 of the Statute of Limitations. There was no doubt that this was a proceeding to recover a sum of money charged upon and payable out of land, and so far it came within the words of the statute. But the appellants contended that the statute did not apply, because there was no person in 1875 who had "a present right to receive the same." That was to say, that at that time the local board were not in a position to enforce the payment of the same. They could not enforce the payment until they had apportioned the expenses. But the words of the statute were "a present right to receive the same." There was no reason why the statute should be construed in any other way than according to the ordinary meaning of its language, and, according to the ordinary meaning of the words, to receive did not mean to enforce payment. The local board became entitled to receive the money directly the charge attached to the land. Then the question arose—Were they capable of giving a discharge for, or release of, the same? Those words were introduced to exclude persons labouring under incapacity, such as infants; but it was plain that if persons were entitled to receive, they were also entitled to give a receipt for the money, and a receipt included a discharge. Therefore, if the section were read in the ordinary sense of the words, the local board had in 1875 a right to receive the money and were capable of giving a discharge for, or release of, the same; and accordingly the present action was brought too late, and was barred by the Statute of Limitations. The opposite construction which had been contended for—namely, that the statute only began to run from the time of the apportionment would be anomalous, and would give to the local board the power of indefinitely postponing their action. It was true that it had been suggested that if the local board delayed the apportionment beyond a reasonable time a *mandamus* would issue to compel them to apportion, but why should the Court consider such difficulties when, by giving to the section its ordinary and grammatical meaning, those difficulties would not arise? The action was, therefore, barred by the Statute of Limitations, and the appeal must be dismissed.

LORD JUSTICE LINDLEY and LORD JUSTICE LOPES delivered judgment to the same effect.

POLICE COURT CASES.

SALE OF FOOD AND DRUGS ACT (1875).

ADULTERATED MILK.

At the Knaresborough Petty Sessions, before H. R. Farrer, Esq., chairman, James Cartledge, milk seller, Forest Moor, Knaresborough, was charged by William Gray, Inspector of Food and Drugs of the Knaresborough Union, with selling adulterated milk. Complainant stated, on September 19 he purchased a sample of new milk from the defendant, in accordance with the provisions of the Act. He declined to have it divided, and the sample was sealed and forwarded to the county analyst the same day. Two days afterwards he received the analyst's certificate, which showed the sample to be 80 parts milk, and 20 parts added water. Reported the matter to the rural sanitary authority, and he was ordered to take proceedings against the defendant. Defendant made no defence. The chairman said it was a serious offence against the public, but being his first offence he would be fined in the mitigated penalty of 20s. and 18s. 6d. costs, or one month's imprisonment.

A QUESTION IN REFERENCE TO MILK ADULTERATION.

Matthew Ramsden, farmer, Lowerhouses, Huddersfield, was summoned for having sold milk that had been adulterated.—Mr. Nalder, town clerk, prosecuted.—The case for the prosecution was that Mr. McGuire, sanitary inspector, purchased from the defendant at Aspley, on October 1, a pint of new milk, which, on analysis by Mr. Jarmain, was found to contain 14 per cent. of added water. In the course of the examination of Mr. McGuire, it transpired that he offered to divide the sample into three parts, but defendant refused to have one; so he went into a shop to put the milk out of a jug into a bottle, and the defendant followed him and asked to see him seal the milk up, but he declined to let him.—Mr. Armitage, for the defendant, submitted that the inspector had failed in his duty in not letting the defendant see the milk sealed; while on the other hand the Town Clerk contended that the purchase was completed when the defendant was offered a part of the milk and refused to accept it, and that therefore he was not entitled to go to Mr. McGuire subsequently and ask to have the milk sealed.—Mr. Slocombe, deputy-magistrates' clerk, made a note of the objection.—The Town Clerk, quoted a case which he contended did away with Mr. Armitage's objection, and the hearing of the case was gone on with, Mr. Armitage being informed that the note of the objection would be at his service if needed for an appeal.—In cross-examination Mr. McGuire said he put the milk into three bottles, and did not seal them. He gave them to Mr. Jarmain within a quarter of an hour.—The defence was that the defendant bought the milk from Matthew Wood, farmer, Upper Hagg, Thongsbridge, who purchased it from Ellis Lockwood, farmer, Honley, who had milked it from his own cows. The milk was sold all through as being pure. The question of added water was a matter of inference for the analyist, as it was well known that cattle gave milk of different qualities, according to the condition they were in.—Mr. Armitage added that the milk was placed in a can and left for the defendant at the corner of a street. It stood there for an hour before the defendant got it, and if some of the neighbours had exchanged a quart of water for a quart of milk it was something that the defendant could not prevent. The Bench believed the case proved, but, taking the defendant's previous good character into account, they only fined him 10s. and costs. On the point of law they granted Mr. Armitage a case.

WATERED MILK.

Before Mr. Bruce, at the Leeds Town Hall, on October 15, Joseph Granger, milk dealer, was summoned by Inspector Walker for having sold milk not of the nature, substance, and quality of the article demanded. The inspector saw the defendant's son selling skim milk. He purchased a pint of the article being sold for a penny, and an analysis showed that the milk contained 20 per cent. of added water. The defendant's wife went to the sanitary office and stated that she was to blame for the water found in the milk. She added that she only put a drop of water in the can to swill it. A fine of 20s. was imposed.

RESPONSIBILITY FOR ADULTERATING MILK.

Before Mr. Bruce, at the Leeds Town Hall, Joseph Emmott, farmer, of Denton, near Benrhydding, was summoned on three charges of having sold adulterated milk. Inspector Walker took samples from the defendant's cans at the New Station. On October 3 the sample on analysis proved to contain 18 per cent. of added water; on October 15 and 16 samples were taken, and found to contain 14 and 16 parts of added water. The cans were addressed to the Provincial Dairies, Leeds, and there was

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a guarantee with them that the milk was pure, which was signed by Mr. Emmott. Mr. Child, on behalf of Mr. Emmott, said the defendant had never authorized, either directly or indirectly, the adulteration, and he was entirely ignorant of it. It was a notorious fact that at certain periods of the year the milk derived from cows was of an inferior quality. There was also one fact to be taken into consideration, and that was that one sample taken proved to be perfectly pure. Mr. Bruce said whether the defendant knew or not he was responsible for the milk. He could see that the milk was sent off securely. A penalty of £5 in each case would be inflicted, £15 in all, including costs.

MARGARINE ACT (1887).

John Kavanagh, 249, Great Homer Street, Liverpool, was fined 10s. and costs for exposing, on October 15, margarine for sale, not being properly labelled.—George Scott, 115, Great Homer Street; Hugh Cauley, 136, Scotland Road; Edward Elliott, 132, Stanley Road; and F. G. Squire, 205, Walton Road, were each fined 5s. and costs for committing a similar offence. William Beaton, 43, Fountains Road, was mulcted in a penalty of 10s. and costs for committing a similar offence. Christopher Deakin, assistant to John Henderson, 204, Stanley Road, and John Bardwell, assistant to William Unsworth, 2, Walton Lane, were each fined 10s. and costs for exposing margarine for sale, the same not having been properly labelled. All the cases were proved by Inspector Baker.

PUBLIC HEALTH ACT (1875).

THE POSSESSION OF UNSOUND MEAT.—(SEC. 117.)

At the Leeds Town Hall, before Mr. Bruce, John Thomas Savage, pork butcher, was summoned under Section 117 of the Public Health Act for having in his possession two pieces of diseased and unsound beef. The Town Clerk (Sir George Morrison) prosecuted, and stated that Inspector Robinson saw the defendant carrying a basket, followed him to his shop and found the basket contained two pieces of beef, which were diseased and unfit for human food. The defendant offered the inspector £1 to let him off, and admitted that he intended to use what he had in the basket for potted beef. Mr. Newhouse said the defendant told him that he bought the meat, which weighed 4 stones, for 17s. The market price was 7s. per stone. The meat was described by Mr. Mason, veterinary surgeon, and Mr. Ward, police surgeon, as being very much diseased. It was dark coloured, soft, and flabby, and a most disagreeable odour arose from it. The defendant, in reply to the charge, said he was not aware that the meat was unsound, or else he would not have bought it. Mr. Bruce said the offer of £1 to the inspector showed that the defendant had a strong suspicion that the meat was diseased. Inspector Robinson stated that from information given by a man going from the place of a horse slaughterer, he had been watching the place for five or six weeks. Mr. Bruce ordered the defendant to be imprisoned for six weeks.

DISEASED MEAT.

At the Borough Police Court, before Messrs. W. Roocroft, W. B. Johnson, and J. White, a general dealer, named Wm. Fairhurst, of Scholes, was charged with having in his possession an animal which was intended for the food of man, and which was unfit for such purpose. Mr. R. Darlington conducted the case on behalf of the corporation, and Mr. Wilson appeared for the defendant. Mr. Leggatt, inspector of nuisances for the borough, said on Thursday, October 10, he visited the Royal Oak Inn, Standishgate, and found, in a stable behind, a heifer in a very emaciated condition. It was alive, and belonged to the defendant. Witness and his assistant remained with it four hours and a half waiting for the defendant to arrive. He did not come, however, and they locked it up and went. The next morning witness went for Dr. Barnish, and took him to the stable, where an examination was made, and he came to the conclusion that the animal was suffering from lung disease. They also called in Mr. Sayer, veterinary surgeon, and he concurred with Dr. Barnish. He expected Fairhurst to be up in the afternoon, but he was not, and then witness seized the animal and left his assistant in charge while he went for a magistrate. Mr. Worsley came up and ordered the animal's destruction, as it was unfit for human food. Arrangements were then made with the knackers, and the animal was killed, and a post-mortem examination made. By Mr. Wilson: He did not see the defendant the whole of the time. Dr. Barnish said he saw the heifer, and it was in a very emaciated condition. Before the post-mortem it was apparent that the animal was diseased. When dead he saw the animal, and it was tuberculised and affected with pleurisy. It was totally unfit for human food, and anyone acquainted with cattle must have been aware of it. It was incurable. No amount of good feeding and attention could have improved it, because tuberculosis was so abundant that the animal had already lost its flesh. Mr. Sayer gave corroborative evidence, and said the pleural membrane was so adhered to the sides that they had to tear it away. Thomas Critchley, landlord of the Royal Oak, said Fairhurst came to him and asked him if the thing could be concealed. He did not know what he meant by "the thing." Mr. Wilson, for the defence, said, after the evidence given by the medical officer of health and Mr. Sayer, it would be idle for him to say that the animal was not diseased, and was not unfit for human food, but the defence raised by him would be that it was not intended for the use of human food. Fairhurst was more a general dealer, who would buy either a cow, or a heifer, or a horse, or even scrap iron, or anything else that he could make a few pounds out of by bargain or barter. It was with that object that the animal was bought. The beast was purchased from a farmer at Rivington, and it was brought, in broad daylight, by a man from that place down Wigan Lane to the Royal Oak Inn. There was no attempt at secrecy, and Fairhurst was not ashamed of what he was doing. The defendant thought, from the appearance of the animal, that with some good "porridging," as he called it, it could be brought round, and if it did not improve, he was going to take it to the knackers. His motive in buying the animal was not to commit the offence complained of. Mr. Roocroft (to defendant): How much did you give for it? I gave a sovereign. It was not worth half-a-crown had it been killed. I got it on speculation. Mr. Wilson said in most cases that came before the magistrates, the animal was killed and dressed, and dressed in such a way as to show beyond all reasonable doubt that it was intended for the food of man; but there was nothing of that sort in the present case. There was no preparation for killing, no suggestion of killing. If Fairhurst had not intended it to be killed, it simply meant that an injustice had been done to him by the action of the inspector in having it killed without a word of warning and explanation to the defendant. The man who drove the animal from Rivington, and a man who was in the Royal Oak yard with the defendant, heard no suggestion of killing the animal. Mr. Roocroft said the magistrates were not satisfied that the animal was not intended for the food of man, and consequently the defendant would be fined 40s. and costs Fairhurst had a long list of convictions against him, and had been twice fined £5 for asimilar offence.

WILFUL EXPOSURE OF A SCARLET FEVER PATIENT.

At the Portsmouth Police Court, before Captain McCoy and J. Griffin, Esq., Joseph Gard, of 86, Charlotte Street, Landport, was summoned for having, on September 18, exposed his child in the street while suffering from scarlet fever, without taking proper precautions against spreading the disease.

Mr. Feltham prosecuted on behalf of the Urban Sanitary Authority, and stated that the summons was brought under the 126th Section of the Public Health Act, which provided that any person who wilfully exposed in public another person suffering from any dangerous or infectious disease should be liable to a penalty not ex-

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ceeding £5. The prosecution would not have been ordered but that the authorities thought defendant's action in allowing his child to go out was calculated to spread the disease among all the children of the neighbourhood. As to the question of whether defendant's conduct was wilful, the judges had decided that if a father who was in charge of his children at home, and knew of the existence of the disease in his house, allowed a child to go out, he must necessarily be held liable for the consequence of his act.

Sanitary-Inspector Lovelock stated that on September 13 he went to defendant's second-hand clothes shop, and inquired how his daughter, who was suffering from scarlet fever, was going on. Defendant was away at the time, but his wife was in the shop, and witness found that the child was out in the street. He had her called in, and gave strict injunctions to defendant's wife that she was to keep the girl upstairs, as he had directed before. The child was ill from August 15 to September 20.

Dr. B. H. Mumby, Medical Officer of Health for Portsmouth, stated that on August 26 he received a certificate from Dr. Fowler, who stated that defendant's child was suffering from scarlet fever. Inspector Lovelock visited the house, and reported to witness that the child was on the premises, where there was a second-hand clothes shop. From the inspector's statement, witness went to the house, to see if he could influence the parents to have the child removed to the Infectious Diseases Hospital. Defendant, however, seemed disinclined to allow her to go, and witness told him that at any rate the patient must be kept upstairs with a proper nurse, and be kept there for six or seven weeks—perhaps longer—until her skin had finished peeling off. The next morning defendant called on witness and gave his final answer in the matter; that his child should not go to the hospital. He promised, however, that she should be kept in one room, with her mother to nurse her. From information which witness received on September 14, from Inspector Lovelock he visited the house again, and found the child downstairs. The skin was peeling from her hands, and the risk of infection was greater than before; indeed, the clothes in the shop were being infected by the child coming downstairs.

Defendant said he had to shut up his shop for six weeks, and then, as he had nothing coming in to feed his wife and child with, and did not like to see them go to the workhouse, he left home to earn something for them, first telling his wife to keep the child upstairs.—The Magistrates' Clerk (Mr. Cousins): You had every opportunity of sending your child to the hospital, as other people do.—Defendant: That's all very well, but if you had only a wife and one child you wouldn't care to do it.—Mr Cousins: Indeed, I should.

It transpired that the child was outside the Court during the hearing of the case, and that the premises had not yet been disinfected, the necessary period not having elapsed. The magistrates urged the medical officer to have the disinfection carried out as soon as possible.

Describing defendant's conduct as most serious, for there was no knowing how the disease might have been spread through his wilful obstinacy, the Bench imposed a fine of £3, including costs, with the alternative of one month's imprisonment

Offence Against the Public Health Act.

At the Knaresborough Petty Sessions, before B. T. Wodd, Esq., chairman, Watson Gibbon, fish dealer, Harrogate, was charged by William Gray, Surveyor to the Knaresborough Union R.S.A., with depositing a large quantity of fish and other offensive refuse on the highway at Pannal on October 16. Mr. Gray stated that on the day in question his attention was called to a large heap of fish and other offensive matter on the highway in the township of Pannal; it was in a most foul condition, and in his opinion likely to be injurious to health The following day he had it removed, and subsequently saw the defendant, who admitted the offence, and paid the cost of its removal. The matter was reported to the Rural Sanitary Authority, and an order was made for a summons to be issued. The defendant did not appear, and was fined 20s. and 10s. costs, or 14 days' imprisonment.

Diseased Meat.

At the Wolverhampton Police Court, before Mr. N. C. A. Neville (Stipendiary), William Hickman, keeper of a butcher's shop and occupier of a slaughter-house, was summoned charged with having had in his possession on August 3. 15 pieces of diseased meat.—The Town Clerk (Mr. H. Brevitt) appeared to prosecute on behalf of the Sanitary Committee, and stated that the meat was seized by Inspector Blanton, who found that although it was very badly "graped" it had been trimmed, and evidently prepared for human food.

Inspector Blanton was called, and stated that he visited defendant's slaughter-house. In the middle of the slaughter-house witness found hanging up a side of beef, and a piece off the ribs. On hooks at the left hand side were four quarters of beef, three heads, one piece off the ribs, two pieces of loin, another odd piece of beef, an udder, a heart, and three pieces of fat. The whole of this was diseased excepting one head, and a small piece of beef. There was every evidence that the meat had been prepared for sale. The inside had been extensively trimmed, and the skirting had been cut off, and witness considered the former had been done to hide the disease. On an examination, however, he found tubercules on every piece. The weight of the diseased meat was 5 cwts. 1 quarter 4 lbs. Witness, after consulting the medical officer, seized the meat, and subsequently saw Dr. C. A. Newnham, one of the borough justices, who examined all the pieces, and told witness to destroy it, adding that it was not fit for even dogs to eat. Previous to this witness had seen the defendant in the slaughter-house, and defendant then said the meat was all right, and expressed his intention of having it examined by a doctor. Witness waited for some time in order that he might do this, but as a doctor did not arrive he took the meat away. Defendant came into the yard with Mr. Bates, veterinary surgeon, and after the last-named gentleman had examined the meat, witness destroyed it in a furnace. Both beasts were "graped," and the disease had passed the first stage. The tubercules might often be seen in the carcase, and witness believed a butcher could ascertain that such a disease existed during the lifetime of the animal. In each case the diaphragm had been removed.

Dr. Malet, borough medical officer, deposed to having examined the meat in question. The pieces were tuberculous, and were in witness's opinion unfit for human food. The diaphragm and the membrane of the wall of the chest—which generally was not touched for any purpose—had been carefully removed, and this unusual operation made witness more suspicious as to what the character of the meat really was. The want of fat, and the extreme emaciation of the carcase also struck witness, and made him hunt more carefully for the tubercules. He found them on every piece, but owing to the manner in which the meat had been prepared, a very careful search was necessary. He found the tubercule with the naked eye.

The Stipendiary said that there was no doubt that the meat was totally unfit for food, and defendant's own workmen dare not swear that the first beast was not afflicted with grapes. Defendant had before been fined for not giving information of unsound meat which was brought to his slaughter-house, and he had also been charged with having diseased meat in his possession for which he was not convicted. He was now liable to a penalty of £20 for each piece, or £300 in all, and if butchers would sell for food meat that which was totally unfit to be eaten, there would be no option but to inflict the full penalty and stop them carrying on a trade at all. However, as defendant had not been convicted before, he (the Stipendiary) would not impose a heavy penalty, but would only fine him £25, including costs.

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PARLIAMENTARY PAPERS ON SANITARY SUBJECTS PUBLISHED SINCE OCTOBER 15, 1889.

(To be had of Messrs. P. S. KING & SON, 5, *King Street, Westminster, S W.)*

Local Government Board.—Eighteenth Annual Report of the Local Government Board, 1888–89. Octavo, pp. 554 ..... 3s. 6d.

Local Government Act, 1888, and County Councils—Public Health and Local Administration—Metropolitan Water Supply—Reports of Major-General A. de C. Scott, Professor Frankland, D.C.L., &c., and Mr. Stoneham—Vaccination, &c. &c.

Metropolitan Board of Works.—Report of the Metropolitan Board of Works for the Year 1888, with an Abstract of Accounts and of Contracts ..... 1s. 7d.

This Report has been compiled as a concise history of the work of the Board during the thirty-three years of its existence.

Vaccination.—First Report of the Royal Commission appointed to inquire into the subject of Vaccination; with Minutes of Evidence and Appendices. *Tables and Diagrams* ..... 2s. 3d.

Evidence of Sir John Simon, K.C.B., F.R.S.—William Ogle, M.D.—R. Thorne Thorne, M.B.—John H. Ranch, M.D.

CORRESPONDENCE.

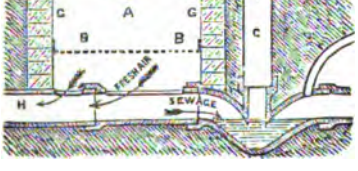
Audi alteram partem.

[*All communications must bear the signature of the writers, though not necessarily for publication.*]

THE INSPECTION AND CLEANSING OF DOMESTIC DRAINAGE.

I HAVE read the interesting papers under this heading by Mr. W. D. Scott Moncrieff in the August and September issues of the RECORD, and beg leave to say a few words, partly chronological.

Mr. Moncrieff says it must be nearly twenty years ago since Dr. Fergus placed a disconnecting trap with a long open grating behind it in the back garden of his house. Now it is hardly that yet. It was in August 1874 he did it, and it was not in the style shown in Fig. II., page 45, but as per the illustration I here give, which shows an old-fashioned trap, with a long slit cut out of the top of the drain pipe coming into it.* Potts's trap, with its

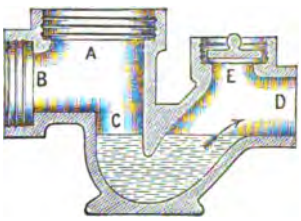


long narrow channel, was patented after this, viz. in January 1875. These narrow channels, about 9 inches or less wide, never seemed to me to be worth the expense, especially when the trap was deep. A manhole with a different style of trap appeared to me more sensible. Mr. Moncrieff, as per foot-note on page 46, seems to think a disconnecting trap set inside a proper manhole a recent idea, but in the fourth edition of my book on *Plumbing and House Drainage*, published in January 1883, I show manholes, and state that I had used them when the traps were deep since the summer of 1875.

Some years before either Fergus, Potts, or the writer came out with their traps, Mr. John Honeyman, F.R.I.B.A., had his Somerset Trap invented and got Provisional Protection for it in 1868. It was a disconnecting ventilating trap, but was never much pushed. In the *Building News* for November 27, 1874, I illustrated a disconnecting ventilating trap for the foot of soil pipes and water pipes, which caused some controversy. My 1875 No. 1 trap was merely an improvement upon this; while my No. 2, shown in Fig. 5, page 47, was brought out in May 1877 as an improvement upon No. 1.

Mr. Norman Shaw's plan, shown in Fig. 4, page 46, was subsequent to the foregoing. It was shown in the *Builder* for January 12, 1878, and met with considerable adverse criticism. The idea of introducing, in 1878, an old-fashioned inaccessible trap buried out of sight in the ground seems to me absurd.

I think the style of trap and the access pipe to it, shown in Fig. 6, page 47, to be open to improvement. The trap is my No. 1 trap (which I have hardly ever used since 1877, myself preferring No. 2, as shown in Fig. 5, page 47); but when it is set 6 or 7 feet below ground, instead of using a tapered pipe small at bottom, it would be better to have the top of the trap enlarged so as to take in a large pipe. For this purpose I invented, in 1883, my "No. 8" style of trap here shown.



Supposing this to be a 6-in. trap, the top opening is 9-in. diameter, and can take in a 9-in. fire-clay pipe; while when laying the pipes the head can be got in to look along the inside of said drain pipes to see if they are all clear. This examination of the interior of the drain pipes when laying them, as stated, and by means of access or inspection pipes at intervals, is a great preventive of after chokage, as well as of its more ready cure should it ever occur.

As to the American system, plans of doing work which serve for us here would not do there on account of the greater cold.

Mr. Moncrieff mentions the water test; while this may be applied at new buildings it would be rather difficult for others, and especially where the people desire nothing disturbed until they know if something is wrong. For the last twelve years or so I have depended upon the smoke test. With it I have tested a house sometimes in a quarter of an hour. At other times, especially at a large mansion house, it has taken two or three days to test as wished, especially when it was desired to particularly localise the faults.

Some sanitary engineers use all the various soil-pipes in a mansion house to ventilate the drains. By this means I believe deaths in a family have taken place from sewage poisoning that would not have occurred had each soil pipe been disconnected and ventilated *per se*, and separate provision made for ventilating the drain or drains.

21, Renfrew Street, W. P. BUCHAN.
Glasgow, October 21, 1889.

EXPERIMENTS IN SEWER VENTILATION.

AFTER reading Mr. Reeves' paper, published at page 157 of the SANITARY RECORD for October 15, it appears to me to be highly misleading and to contain not a few mistakes—in fact, Mr. Reeves' reasons altogether from false premises.

Near the opening of his paper, he says:—"The motive power to form fresh air currents in sewers is formed by

* Something went wrong with the Doctor's soil-pipes about the end of 1875, and I was called in to sort them, and *inter alia* did some trapping on the sectional system. The dotted line B B in the diagram indicates a wire cage, which was filled with charcoal, but it got damp and impeded the ventilation, so I cleared it out, but left the wire cage in as a rat and stick trap. The small pipe at outer end of the trap was connected to a rain pipe to ventilate the sewer. I do not believe in rain-water pipes acting as sewer ventilators to blow sewer gases in below the slates, and so I think I got this done away with.—W.P.B.

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the additional weight per cube foot of air on one grating, as compared to that of another, whether this weight is caused by the difference of temperature or wind pressure."

Instead, however, of telling us about the effect of wind pressure, or the results of experiments made in sewer ventilation, with the wind as the motive power, he seems to ignore it throughout the paper, and confines himself to showing how little results in the way of ventilation are to be got from difference of temperature and difference of barometrical pressure on the various sewer ventilating openings.

The highest pressure he mentions during the eight months from January to August, inclusive, 1889, is barely 27 grains. Yet in the fifth edition of Parkes' *Practical Hygiene*, published in 1878, we read that with a motion of only 3 miles an hour, the pressure of the wind is ¾ of an ounce on each square foot; it is 1 ounce at 3½ miles, 2 ounces at 5 miles, 4 ounces at 7 miles, ½ lb. at 10 miles, and 1 lb. at 14 miles"; while at higher speeds, it blows down hay-stacks, chimney cowls, trees, and buildings. Then in regard to times when it is popularly supposed there is no wind, or that the wind is "still," Dr. Parkes says it will yet be "really moving 1 or 1½ miles an hour."

Notwithstanding all this, Mr. Reeves says that, because the weight of the atmosphere (vertically, I suppose he means) above the sewer gratings was less from April to August than it was from January to April, therefore, on account of this lightness, there was no motive power for ventilation, and so the air in the sewer became stagnant and formed sewer gas. He further asserts that, because there was no rainfall from June 16 to July 8, that, therefore, "the air in the sewers must have remained for 22 days almost stagnant."

Now, all this is pure nonsense, or a mistake, caused by reasoning from false premises. Mr. Reeves has entirely ignored the effect of the air in motion versus the effect of the mere weight of a vertical column of air. He might as well tell us that, because the weight of a bullet of a certain size at a temperature of 50 deg. lying on our head is not much more than one of same size at a temperature of 70 deg., and does no harm, that, therefore, the same bullet striking the head at a speed of a mile in 3 or 4 seconds will do no harm either.

In an interesting paper on "Experiments on the Movements of Sewer Air at Wimbledon in 1888," by Mr. W. Santo Crimp, surveyor of Wimbledon, and published in the "Proceedings of the Institution of Civil Engineers," we find the author asserting that the principal measureable motive power to cause motion of the air in the sewers was the wind, and he also states that the direction of that motion was greatly affected by the wind. In opposition to Mr. Reeves, who supposes there would be very little or no movement of the air in the sewers in the summer months, Mr. Crimp found, by actual experiments with an anemometer, that there were often even "strong" currents. While, therefore, the temperature theory gave feeble or no currents, the wind pressure in practice gave strong currents, and it was very seldom, if ever, that the air in the sewer was stagnant for any length of time.

All this from Mr. Crimp agrees with my own experiments, and I find it is quite easy to get sufficient ventilation for the sewers, only it has to be seen to that it is carried out properly. I do not believe in having the openings so that they can act as outlets under our mouths and noses, as at the gully gratings at the edge of pavements. The sewer ventilating openings should either be in the middle of the streets, or high up above our heads or above the houses. When the sewer air is blown off above our houses, it gets disinfected for nothing by the sulphur in the smoke, and is blown away with the smoke, and becomes harmless. Mr. Reeves ignores this fact, and would have us put down a lot of disinfecting appliances at great cost and continuous expense and attention, to deodorise the air in or from our sewers; but I consider that purely unnecessary, and a mistaken way of dealing with the sewers. Disinfectants and deodorants are only useful occasionally, like medicines. The best general disinfectant for our sewers is the atmosphere properly applied. This appears to be also the opinion of Sir Henry E. Roscoe, after his expensive experiments with chemicals lately for the London sewers. As to protecting our houses from sewer gas (as well as rats), a good disconnecting ventilating water-trap properly set, with tight drains, is a very much better safeguard than trusting to deodorants put into the sewers. Where, however, the house drains are bad themselves, it is somewhat out of place to cry out against the sewers.

21, Renfrew Street, W. P. Buchan.
Glasgow, Oct. 28, 1889.

ANTISEPTIC VENTILATION.

In reference to the subject of antiseptic ventilation claimed by Mr. S. M. Burroughs as a new invention, and reported in your issue of October 15, we beg to say we are the manufacturers of a ventilator invented by Mr. H. W. Crosse, about eighteen months ago, for the special purpose of admitting fresh air into wards, &c., united with vapours of an oxygen disinfectant. The ventilator at the same time is fitted with the necessary means for governing the force and quantity of air admitted, and also of warming the same if required.

Comyn Ching & Co.

THE LONGEVITY OF TOTAL ABSTAINERS.

A table of figures purporting to set forth the difference in longevity between teetotalers and non-teetotalers, and so got up as to be calculated to deceive persons unfamiliar with vital statistics, has been widely circulated by the liquor party, and has obtained great publicity through the press. This table was compiled by Dr. Isambard Owen, of London, from statistics based on certain records kept by a number of medical men, of the ages at death of teetotalers and non-teetotalers of 25 years and upwards. It shows that, in the cases recorded, the average age at death was—

Of Total Abstainers . .	51 years	80	days.
Of the Decidedly Intemperate .	52 ,,	14	,,
Of the Free Drinkers . .	57 ,,	216	,,
Of the Careless Drinkers . .	59 ,,	246	,,
Of the Habitually Temperate .	62 ,,	50	,,

It has usually been assumed that these figures demonstrate the lives of teetotalers to be, on the average, shorter than even those of drunkards. Of course they do nothing of the sort. Dr. Isambard Owen, who compiled the figures, has, more than once, in letters sent round to the press, warned the public that the interpretation put upon the figures by the liquor party is absurd. In a letter dated March 12 of this year, he said: "We have not, in these returns, the means of coming to any conclusion as to the relative duration of life of total abstainers and habitually temperate drinkers of alcoholic liquors." And the *Lancet* of April 13 says of these figures, and the ignorant or fraudulent way in which they have been misused: "By dint of quoting the figures and omitting the equally important context, some spokesmen of the liquor selling interest have claimed to assure the public on 'medical authority' that total abstinence has been proved to be a practice highly detrimental to health, and that abstainers as a body are shorter lived than habitual drunkards. The doctrine thus boldly stated is, fortunately, preposterous enough to defeat its own object." How preposterous it is the following facts will show.

Suppose it were thought desirable to prove that attendance at Board schools shortened life, a case much more formidable than this one could, on this principle, be got up in support of the theory. A number of doctors recording the deaths and the ages at death of such of their patients of 25 years old and upwards as had attended Board schools, would have few to record; but the few would be those of people under 30 years of age, and the average age at death could hardly be more than, say 27

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years, while that of persons over 25 who had *not* attended Board schools would, of course be very much higher. And so, on the liquor people's theory of vital statistics, the proof would be overwhelming that attendance at Board schools greatly shortens human life. Of course, from the date at which Board schools came into existence, we know that it is impossible for the average age at death of those who had attended these schools, and had died after having attained the age of 25, to be anything like as great as the average age at death of persons over 25 who had not attended these schools. In the one case the deaths much have been those of persons between 25 and say 35 at the utmost; and in the other, of persons ranging from 25 to the extreme limit of human life. The same principle applies, though not to the same extent, to the matter in hand. The temperance movement is comparatively new, and, as is well known, it is among the young mainly that, during the last quarter of a century especially, it has been influential and successful. Hence it is that the *proportion* of teetotalers in the section of the community between 25 and, say, 35 or 40, is enormously greater than among that portion of it whose ages exceed 35 or 40 years. As there is no period of life at which there are not *some* people who die, and as the *rate* of mortality is very much lower in early manhood than it is later in life, we should expect to find that amongst teetotalers the deaths which have occurred would, in proportion to the number of teetotalers living, be few, and, *on the average*, would have taken place at a relatively early age. Working-class teetotalers ought to be compared with working-class non-teetotalers, and middle-class abstainers with middle-class non-abstainers, and so one.

In the following table the materials are supplied for a comparison between the death-rates, at various ages, of working-class teetotal Rechabites and those of working-class non-teetotal Foresters. It also supplies the means of comparing the rates of mortality, at the same ages, of middle-class healthy assured males with those of Rechabites and those of males of all classes. The table gives the number of deaths per 1,000 per annum at the ages named, of Rechabites, Foresters, "healthy assured males," and "males of all England." It should be read thus:—*Of* 1,000 *Rechabites, age* 25, 3·722 *will die before reaching the age of* 26; *of* 1 000 *Foresters, age* 25, 7·370 *will die before reaching the age of* 26; *of "healthy assured males,"* 6·630 *will die before reaching the age of* 26; *and of* 1,000 *"males of all England,"* 7·729 *will die before reaching that age; and so on.*

Age.	Rate of Mortality per 1,000 per annum in the Order of Rechabites for the five years 1879-83.	Rate of Mortality per 1,000 per annum in the Order of Foresters for the five years 1871-75.	Rate of Mortality per 1,000 per annum of the "Males of all England," 1871-80.	Rate of Mortality per 1,000 per annum of "Healthy Assured Male Lives," according to the experience of 20 Life Assurance Offices, collected by the Institute of Actuaries.
25	3·722	7·370	7·729	6·630
30	4·057	8·070	9·386	7·720
35	4·337	10·130	11·276	8·770
40	5·094	12·080	13·893	10·310
45	6·272	15·110	16·691	12·190
50	9·108	18·650	20·390	15·950
55	12·407	26·260	28·669	21·030
60	26·131	33·660	35·450	29·680
65	40·417	49·370	48·856	43·490

United Kingdom Alliance JAMES WHYTE.
Offices, 16, Deansgate, Manchester,
Nov. 1.

THE CROSSE VENTILATOR AND DISINFECTOR COMBINED.

THE subject of antiseptic ventilators being of public importance, and one to which my attention has for some time been directed, I was most interested in the paper read by Mr. S. M Burroughs at the recent Worcester Congress, and as you were kind enough to give me a favourable notice of a combined ventilator and disinfector which I designed eighteen months ago, to bring air into hospital wards, barrack-rooms, dairies, &c., united with the vapours of an oxygen disinfectant, I beg permission for a few words on the subject. The practice of laying saucers of disinfectants about in a room, apart from its danger and inconveniences, has never appeared to me the best method of preventing the spread of contagia, and the only safe plan seems to be to thoroughly impregnate the air with the disinfectant employed; and, bearing in mind that the germs of disease cannot exist in the presence of oxygen, this method of preventing them developing cannot but be effectual, and especially in the case of dairies and cow-sheds does the method of preventing contamination seem valuable.

St. Mary's Cottage, Putney. H. W. CROSSE.
November 1.

NOTICES OF MEETINGS.

ROYAL STATISTICAL SOCIETY.

(Offices: 9, Adelphi Terrace, Strand, W.C., London.)

THE FIRST ORDINARY MEETING of the present session will be held on Tuesday, November 19, 1889, at the Royal School of Mines, 28, Jermyn Street, S.W., at 7.45 P.M., when an opening address will be delivered by the President, Dr. T. Graham Balfour, F.R.S., &c.

THE SOCIETY OF ARCHITECTS.

PROGRAMME of meetings to be held on Tuesday evenings, at 7.30 P.M., at St. James' Hall, Piccadilly, W., during the Session 1889-90:—

November	26, 1889	...	Paper.
December	10 ,,	...	,,
January	14, 1890	...	,,
,,	28 ,,	...	,,
February	11 ,,	...	,,
,,	25 ,,	...	,,
March	11 ,,	...	,,
,,	25 ,,	...	,,
April	15 ,,	...	,,
May	13 ,,	...	,,
June	17 ,,	...	Annual General Meeting.

LOCAL INTELLIGENCE.

THE METROPOLITAN PUBLIC GARDENS ASSOCIATION.—A meeting of members was held at 83, Lancaster Gate, on November 6, Mr. J. T. Bedford presiding. A grant of £105 was made for a public swimming-bath in Whitechapel; and it was agreed to repair the seats on the Triangle, Borough; to give six seats for Putney Hill; to offer seats and trees for a small space in Camberwell Road; and to give 5s. per week for one year towards the maintenance of St. Clement's Ground, Notting Hill. The Secretary reported progress in several important matters, including the opposition to the scheme for building upon the Bethnal Green Poor's Land; the fight for the Fulham Lammas Land; and the proposed laying out of a graveyard belonging to St. Bartholomew's Hospital. He stated that shrubs had been placed on the triangle at Piccadilly Circus, that seats had been offered for Highgate Hill, and that the landscape gardener was proceeding with the tree planting at Putney and East Ham. The preservation of Holland Park and the Alexandra Park, the future maintenance of Winthrop Street Playground, and the other open spaces of the Association, the destruction of trees in Kensington Gardens, and the opening of Board School Playgrounds were amongst the many subjects discussed at the meeting.

THE SMOKE NUISANCE AT SHEFFIELD.—A memorial very extensively and influentially signed has been presented to the Town Council praying them to take action in suppressing the smoke nuisance, much of which is said to be preventible. The matter has been referred by the Town Council to the Health Committee.

THORNE WATER SUPPLY.—At a recent meeting of the Thorne Board of Guardians the report of the analyst was received, to whom had been submitted a sample of water used in the Workhouse, which is taken from the river, and the analyst pronounces the water unsatisfactory.

MR. E. CLIMSON GREENWOOD has been appointed teacher of vaccination at the Vaccination Stations 77, Welbeck Street, and Omega Place, St. John's Wood, in succession to the late Mr. W. A. Sumner.

TYPHOID FEVER AT ST. HELENS.—It is reported that 381 cases of typhoid fever and 50 deaths have occurred at St. Helens within the past five months.

A Medical Officer for Woolwich.—Woolwich, which has long enjoyed the exceptional position of being without a medical officer of health, and which has hitherto successfully resisted all attempts made by the central authority to cause it to conform to the general practice in other parts of the United Kingdom, has been compelled by a special clause in the new Infectious Diseases (Notification) Act to appoint one.

Mr. William Tomlin (Inspector of Weights and Measures for Bootle-cum-Linacre) has been appointed by the Middlesex County Council Inspector of Weights and Measures, and Inspector under the Food and Drugs Act, for the Eastern Division, at a salary of £170, *vice* Mr. Foulsham.

Mr. Andrew Young, Surveyor to the London School Board, has resigned, having been appointed Valuer to the London County Council.

Public Testimonial to a Sanitary Inspector.—Mr. G. A. D. Mackay, Sanitary Inspector and Inspector of Cleansing for Edinburgh, was presented, on October 10, at a large and influential meeting presided over by Bailie Goudie, with a gold albert chain and pendant, together with a purse of sovereigns, in recognition of his services to Paisley during the time that he was the cleansing and sanitary inspector of the burgh. Mr. Mackay, in the course of his reply, referred to the high death-rate that had been in Paisley now for a number of years, and said he believed that that high rate, on account of the sanitary improvements being carried out by the Town Council, would soon be greatly reduced. Speeches complimentary to the guest of the evening were afterwards made by Dr. Donald, Councillor Wilson, Captain Harding, Lieutenant Macrae, Mr. J. Ross M'Gregor, Mr. James Barclay, and Mr. A. C. M. Ingram.

APPOINTMENTS.

Medical Officers of Health.

Brodribb, Dr., has been appointed by the Colne and Marsden Local Board their Medical Officer of Health for three years, at a salary of £30 per annum.

Davies, D. S., L.R.C.P.Lond., M.R.C.S.Eng., has been re-appointed Medical Officer to the Bristol Port.

Fenton, Dr. J. S., has been re-appointed Medical Officer of Health by the Brackley Town Council for two years.

Fraser, Donald Alexander, M.R.C.S., L.S.A., M.D.Brussels., has been appointed Medical Officer of Health to the Totnes Urban Sanitary Authority, at a salary of £20 per annum.

Griffiths, Ed., has been appointed Medical Officer of Health to the Lampeter Rural Sanitary Authority, *vice* J. H. Williams, resigned.

Heaven, J. C., L.R.C.P.Lond., M.R.C.S.Eng., has been re-appointed Assistant Medical Officer to the Bristol Port.

Johns, W. S., has been appointed Medical Officer of Health to the March Urban Sanitary Authority.

Mackay, J. D., M.B., C.M.Edin., has been re-appointed Medical Officer to the Lunesdale Rural Sanitary Authority.

Palm, Dr. T. A., has been appointed Medical Officer of Health to the Wigton Urban Sanitary Authority, *vice* Dr. D. White.

Parsons, F. J. C., L.R.C.P.Lond., M.R.C.S.Eng., has been appointed Medical Officer of Health to the Port Sanitary Authority, Bridgwater.

Pollock, R., M.B., C.M., F.F.P.S.Glasgow, has been appointed Medical Officer of the Burgh of Pollokshields, Glasgow.

Seaton, Edward, M.D.Lond., F.R.C.P., has been re-appointed Medical Officer of Health for Chelsea.

Smith, William Robert, M.D., D.Sc., F.R.S.Edin., 74, Great Russell Street, Bloomsbury, has been appointed Medical Officer of Health to the Woolwich Local Board of Health at a salary of £100 per annum.

Still, G. C., M.B., C.M.Aberdeen, has been appointed Medical Officer of Health to the Shepshed Urban Sanitary Authority, *vice* Dr. Wood, resigned.

Turner, Edwin, M.R.C.S., L.S.A., has been re-appointed Medical Officer of Health to the Stourbridge Rural Sanitary Authority.

Williams, J. H, has been appointed Medical Officer of Health to the Port Sanitary District, Chester Union, *vice* A. W. Hughes, resigned.

Poor-Law Medical Officers.

Anningson, Bushell, M.D., M.R.C.S., has been re-appointed Medical Officer to the Cambridge Union District.

Broadbent, Frank, M.R.C.S., &c., has been appointed Medical Officer to the Newark Union, Collingham District, at a salary of £33 per annum and fees.

Carter, T. P., has been appointed Medical Officer for the Lydney District of the Chepstow Union, *vice* A. S. Currie, resigned.

Cheesewright, John F., L.R.C.P.Edin., M.R.C.S.Eng., has been appointed Medical Officer to the Rawmarsh District of the Rotherham Union, at a salary of £40 per annum, *vice* W. J. Smith, L.R.C.P.Edin., L.M., L.S.A.Lond., resigned.

Cocking, Dr., has been appointed Medical Officer for the Alfreton District, Belper Union, for a period of eight weeks, *vice* Dr. Roberts, deceased.

Connor, William G., L.R.C.S.Irel., has been appointed Medical Officer to the Earl Soham District of Plomesgate Union, at a salary of £60 per annum, *vice* C. G. Symons, resigned.

Cox, Charles H., has been appointed Medical Officer to the Collingham District of the Chesterton Union, *vice* J. Bridger, deceased.

Fleming, R. M., has been appointed Medical Officer of Holbrook District and Workhouse of the Samford Union, *vice* Dr. A. Fleming, deceased.

Fowler, Dr. Webb, has been re-appointed a District Medical Officer, Coventry Union.

Grant, F., L.R.C.P.Edin., M.R.C.S., has been re-appointed Medical Officer to the 4th District and Workhouse, Market Harborough Union.

Griffith, P. G., has been appointed Medical Officer to the Pelhams District of the Bishop Stortford Union, *vice* Frank Edwards, resigned.

Griffiths, Evan H., has been appointed Medical Officer to the Llanybythen District, Lampeter Union, *vice* E. C. Thomas, resigned.

Hamill, Dr. R. J., has been appointed Medical Officer of the Buckingham Palace Road Workhouse, at a salary of £50 per annum.

Hamilton, Henry, M.R.C.S., L.R.C.P., L.S.A., has been appointed Medical Officer of the Wymondham District of the Melton Mowbray Union, at a salary of £32 per annum.

Hartill, John T., L.R.C.P.Lond., M.R.C.S.Eng., has been re-appointed Medical Officer to the Willenhall and part of Wednesfield (Wolverhampton) Unions.

Hooper, Marshall, L.R.C.P., L.R.C.S.Edin., has been appointed Medical Officer to the Codnor Park District of the Bashford Union, at a salary of £5 per annum.

Hubbard, Alfred E., L.R.C.P., L.R.C.S., has been appointed Medical Officer for the Sutton Bonington District of the Loughborough Union, *vice* F. J. Hindle, resigned.

Kenny, J. M. S., has been appointed Medical Officer to the Granard Union, Longford, *vice* P. J. Slevin, L.K.Q.C.P.I., L.R.C.S., resigned.

Long, George H., has been appointed Assistant Medical Officer to the Parish of St. Pancras, *vice* R. F. Gill.

Mahon, R. B., M.D., M.Ch., has been appointed Medical Officer to the Ballinrobe Union, *vice* J. D. Kelly, L.R.C.S I., L.R.C.P. Edin., deceased.

McLean, William Walker Laroche, M.R.C.S., has been appointed Medical Officer to the Stickney District of the Spilsby Union, *vice* Dr. MacLaren, M.B., C.M., resigned at a salary of £45 per annum.

McMuir, G., has been appointed Medical Officer of the Fritwell District of the Bicester Union, *vice* E. W. Turner, deceased.

McNair, George, L.R.C.P.Lond., M.R.C.S.Eng., has been appointed Medical Officer to the Deddington No. 1 District of the Woodstock Union, *vice* Edward W. Turner, deceased.

Miller, J. T. Roger, L.S.A.Lond., has been appointed District Medical Officer and Public Vaccinator for the Leavening District of the Malton Union, *vice* William Deeley, M.D., L.K.Q.C.P.I., resigned.

Moore, A. J., M.R.C.S., L.S.A., has been re-appointed Medical Officer of the Parish of St. Lawrence, Reading Union.

Moore, Frederic H., L.R.C.S.Irel., Lic. Midwif., K.Q.C.P.I., has been appointed Medical Officer for the South Welney District of the Downham Union, at a salary of £10 per annum.

Ord, William Theophilus, M.R.C.S.Eng., L.R.C.P.Lond., has been appointed Medical Officer and Public Vaccinator to the Halesowen District of the Stourbridge Union, *vice* Thomas McLauchlan, M.D., resigned.

Purves, A. Scott, M.D., has been appointed Medical Officer of the Lesbury District of the Alnwick Union, at a salary of £25 per annum, *vice* Dr. A. J. Main, resigned.

Roberts, Dr. E. J., has been appointed Medical Officer to the 4th District of the Drayton Union, *vice* Mr. T. L. Lloyd, resigned.

Rygate, Dr. B. R., has been re-appointed Medical Officer to the St. George's-in-the-East Union, at a salary of £200 per annum.

Slatter, O. T., M.R.C.S., has been appointed Medical Officer to the Caldicot District of the Chepstow Union, at a salary of £45 per annum.

Snadden, James, M.B., C.M.Edin., has been re-appointed Medical Officer to the No. 4 District of the Wortley Union.

Stein, C. G., M.R.C.S., has been re-appointed Medical Officer of Mansfield, Woodhouse.

Todd, J., M.R.C.S., L.S.A., has been re-appointed Medical Officer of the 2nd District of the Lunesdale Union.

Wellburn, E. D, L.R.C.P., L.R.C.S.Edin., has been appointed Medical Officer and Public Vaccinator to the Sowerby District of the Halifax Union, *vice* S. Horsfall, deceased.

Whitterton, J., L.R.C.P.Edin., M.R.C.S.Eng., has been re-appointed District Medical Officer to the North Bierley Union.

Winship, W. A., has been appointed Medical Officer to the Elsdon District of the Rothbury Union, *vice* W. Dinwoodie, resigned.

Wyllie, William, M.D., M.R.C.M.Glasgow, has been re-appointed Medical Officer to the 3rd District of the Lunesdale Union.

Yeoman, W. M., M.B., M.R.C.S., has been appointed Medical to the Stokesley Union, *vice* W. G. Forbes, M.B., M.S., Officer deceased.

Certifying Factory Surgeon.

Buchan, William A., M.B., has been appointed Certifying Factory Surgeon, Plymouth.

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Inspectors of Nuisances.

Buswell, R. W., has been appointed Inspector of Nuisances to the Brixworth Rural Sanitary Authority, *vice* R. H. Gilby.

Chappell, F. W., has been appointed Inspector of Nuisances to the Linton Rural Sanitary Authority, *vice* R. Chappell, deceased.

Crowhurst, Albert B., has been appointed Inspector of Nuisances to the Amersham Union Rural Sanitary Authority, at a salary of £50 per annum, *vice* F. Bryan, resigned.

Griffin, J., has been appointed Inspector of Nuisances to the Marlborough Urban Sanitary Authority, *vice* J. Moulden.

Jenkins, W., J.P., has been appointed Inspector of Nuisances to the Bodmin Rural Sanitary Authority.

Pontyclown, Gomer S. Morgan, has been appointed Inspector of Nuisances, Surveyor, and Collector of Water Rates to the Pontypridd Rural Sanitary Authority, at a salary of £150 per annum, and 5 per cent. on amount collected.

Public Analyst.

King, Dr. Falconer, City Analyst, Edinburgh, has been appointed Public Analyst for the County.

Surveyor.

Smithson, Charles W., has been appointed Surveyor and Nuisance Inspector to the Malton Urban Sanitary Authorities, at a salary of £90 per annum, a reduction of £70 per annum on the salary of his predecessor.

Clerks.

Fox, Mr. Robert Eyes, of Birkenhead, has been appointed clerk to the Burnley Town Council, *vice* Mr. Walter Southern, resigned.

Hex, Mr. F., has been appointed clerk and accountant to the Torquay Local Board, *vice* Mr. Briscoe Hooper, whose services are retained as legal adviser.

RESIGNATIONS.

Bowker, Dr. E. H., Medical Officer to the Flyingdales District of the Whitby Union.

Broadbent, J., Medical Officer of the Collingham District of the Newark Union.

Bryan, F., Inspector of Nuisances to the Amersham Rural Sanitary Authority.

Evans, John, Inspector of Nuisances to the Pontypridd Rural Sanitary Authority.

Harding, Dr., District Medical Officer of the Parish of Whittlesey.

Hart, F. J. L., Medical Officer of the Wansford District of the Stamford Union.

Hooper, Briscoe, clerk to the Torquay Local Board.

Main, Dr. A. J., Medical Officer of the Lesbury District of the Alnwick Union.

Millington, J. P., Medical Officer of the Second District of the Wolverhampton Union.

Rattray, Dr. A., Medical Officer of the Wymondham District of the Melton Mowbray Union.

Reynolds, H. S., Medical Officer of the Codnor Park District of the Basford Union.

Smith, Dr., Medical Officer of the Rawmarsh District of the Rotherham Union.

Southern, Walter, clerk to the Burnley Town Council.

Symons, C. G., Medical Officer of the Earl Soham District of the Plomsgate Union.

Watts, A. N., Medical Officer of the Sharnbrook District of the Bedford Union.

Williams, H., Medical Officer of the South District of the Bingham Union.

Wood, Dr., Medical Officer of Health to the Shepshed Urban Sanitary Authority.

VACANCIES.

Workhouse Medical Officer and District Medical Officer.—The Woodstock Board of Guardians will, on December 3, consider the appointment of a Medical Officer for the Workhouse, and of a Medical Officer and Public Vaccinator for the Woodstock No. 1 District. The rate of salary and emoluments of the offices will be:—(1.) Salary for the workhouse, £35 a year, and for midwifery, 10s. 6d. each case, and successful vaccination, 1s. 6d. each case; and (2.) salary for the district £40 a year, and for midwifery, 10s. 6d. each case, and successful vaccination, 1s. 6d. each case within two miles, and 3s. beyond two miles of the officers' residence. Applications with testimonials, for a consecutive period of five years, to be addressed to R. B. B. Hawkins, Esq., Clerk to the Guardians, Woodstock, before November 27.

Public Analyst.—The Vestry of St. Giles, Camberwell, are prepared to receive applications for the appointment of a Public Analyst under the Sale of Food and Drugs Act, 1875, from January 1 next. Candidates must have competent knowledge, skill, and experience, and be fully qualified to perform the duties of the office. The appointment is subject to the approval of the Local Government Board. The fees payable are on a scale fixed by the vestry, and average about £160 per annum. Applications, with not more than three testimonials, must be sent to the Vestry Clerk, endorsed, "Public Analyst," not later than Nov. 15.

Surveyor.—The Corporation of Lancaster require the services of a competent person as Borough Surveyor. Salary £300 a year. Person appointed must not be more than 45, and must devote the whole of his time to the duties. Applications, with testimonials, must be sent to the undersigned by November 21.—W. O. Roper, Deputy Town Clerk.

Clerk.—The Justices of Lexden and Winstree Division of Essex invite applications for the appointment of Clerk. Salary £252. Applications to be sent to the Chairman, Mr. W. H. Penrose, The Rookery, Dedham, by November 16.

DEATHS.

Fleming, Dr. A., Medical Officer of the Holbrook District of the Samford Union.

Gordon, Joseph, engineer to the London County Council.

Horsfall, Dr., Medical Officer of Health to the Sowerby Bridge Urban Sanitary Authority.

Owen, James, Inspector of Nuisances to the Chester Rural Sanitary Authority.

Roberts, Dr., Medical Officer for the Alfreton District of the Belper Union.

Roberts, T. L., Medical Officer of the Shirland District of the Chesterfield Union.

Wase, J., Medical Officer of the Huntspill District of the Bridgwater Union.

CONTRACTS.

Construction of Sewer.

The Rivers Committee of the Manchester Corporation invite tenders for contracts Nos. 1, 2, 3 and 4 for the construction of Main Outfall Sewer and Storm Overflow in connection with the Manchester Main Drainage Scheme.

Plans and Drawings may be seen, and Specifications and Quantities obtained, on application to Mr. J. Allison, City Surveyor, Town Hall, Manchester.

Sealed Tenders, endorsed "Tender for Contract No. —, Manchester Main Drainage Scheme," and addressed to the Chairman of the Rivers Committee, City Surveyor's Office, Town Hall, Manchester, to be sent in by November 16.

Chain Pump.

The Woodford Local Board require a Chain Pump capable of lifting 50 tons of sludge per hour a height of 25 feet, and Portable Engine for working same, with gearing complete, delivered and fixed in working condition at the Board's Outfall Sewage Works, Woodford, Essex.

Tenders to be addressed to R. Martin, Clerk, Woodford Local Board, Woodford Green, Essex, by November 30.

Construction of Underground Urinal.

The Streets Committee of the Commissioners of Sewers of the City of London invite Tenders for the construction of Underground Urinals and Water-closets, &c., at northern end of Old Bailey, in accordance with plans and specifications to be seen at the office of the Engineer to the Commissioners at Guildhall.

Tenders to be sent in by November 15.

Construction of Sewers.

Tenders are invited for the construction of sewers in parts of Balsall Heath Road and Hodmoor Road, Birmingham, for the Public Works Committee.

Drawings and Specifications may be seen at the office of Mr. William S. Till, Surveyor, Council House.

Tenders, addressed "Tender for Sewers," to be sent to the Surveyor by November 16.

For the construction of about 2,360 lineal yards of brick-lined sewers, silicated stone-pipe, and iron-pipe sewers, together with 27 manholes, &c., for the West Ham Town Council (Mr. Lewis Angell, M.I.C.E., Borough Engineer):—Cooke & Co., Battersea, £12,097.

Drainage and Sewage Works.

The London County Council invite Tenders for supplying of materials and the execution of the day and measured works of the Council in respect of its main drainage and other sewers, pumping-station, bridges, &c.

Particulars can be obtained on application to the Engineer of the Council, at the office, Spring Gardens.

Tenders, which must be on form supplied from the office, Spring Gardens, S.W., and addressed to the Clerk of the Council, are to be delivered before 5 P.M. on November 20.

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West Ham Main Drainage Extension.

(Contract No. 6.)

The Council invite Tenders for the construction of No. 4 Sewage Precipitate Tanks (total area 53,000 yards), with outfall chambers, sludge tanks, effluent pipes and conduits, &c., in connection therewith; also all necessary alterations to the existing Tanks, &c., situated at the Pumping Station, Canning Town.

Plans may be seen and particulars obtained at the office of Mr. Lewis Angell, M.I.C.E., Borough Engineer, Town Hall, Stratford.

Tenders, endorsed "Tender for Sewage Tanks," to be sent to the above office not later than November 26.

Sewage Tanks.

Tenders are invited for the works required in the forming and making of two Sewage Tanks at their sewage farms for the Tong Local Board.

Plans and specifications may be inspected and other particulars obtained on application to Mr. M. Outhwaite, Surveyor, Oddy Street, Dudley Hill, near Bradford.

Sealed Tenders, endorsed "Tender for Sewage Tanks," to be sent to Mr. M. B. Newell, 15, Bridge Street, Bradford, by November 18.

Artesian Well.

The Streets Committee of the Commissioners of Sewers of the City of London will meet in the Guildhall on Friday, November 29, 1889, at 2 o'clock precisely, to receive Tenders for completing an Artesian Well at New Street, Gravel Lane, in the City of London, agreeably to specification and general conditions, which may be obtained at the office of the Engineer to the Commissioners, in the Guildhall.

All Tenders must be delivered in before 2 o'clock on the said day, and parties sending in proposals must attend personally or by a duly authorised agent.

COMPETITIONS.

Cambridge Examination in State Medicine.

The Examiners in State Medicine of the University of Cambridge have issued the following list of those examined and approved for both parts of the examination, who are entitled to a diploma certifying to the competent knowledge of what is required for the duties of a medical officer of health. All those approved are on the Medical Register of the United Kingdom. The names are arranged in alphabetical order:—F. E. Adams, A. Ambrose, A. R. S. Anderson, C. J. Ayres, G. R. Beardmore, J. T. Calvert, J. W. Campbell, A. K. Chalmers, E. H. Colbeck, H. D. S. Compigné, W. Cotton, A. M. Davies, U. K. Dutt, J. H. Garrett, H. C. M. Gibson, J. Glaister, J. E. Gould, W. Gruggen, W. Jackson, J. R. Kaye, C. S. Kilner, R. Laing, J. Loane, C. R. Macdonald, W. A. Macnaughton, R. M'Neill, J. Nall, R. L. Roberts, D. Roxburgh, A. F. Street, J. Taylor, G. T. Thomas, G. M. Thompson, C. B. Voisey, G. H. Weston.

Certificates of Competence to Sanitary Inspectors.

The Council of the Sanitary Association of Scotland have appointed a Board of Examiners, and the Board have appointed the following gentlemen as examiners for the first year:—Dr. T. G. Nasmyth, Cowdenbeath; Dr. P. Caldwell Smith, Motherwell; Mr. Peter Fyfe, Sanitary Inspector, Glasgow; and Mr. G. A. D. Mackay, Sanitary Inspector, Edinburgh. Full particulars regarding the examinations may be had from the Secretary, Mr. James C. Stobo, Sanitary Inspector, Rutherglen.

NOTES AND QUERIES.

Having for some time back been in the receipt of Queries appertaining strictly to sanitary work, and which it would be easy to answer without having to refer our correspondents to competent professional advisers, we have opened a column in which to register such Queries and Replies thereto as can fairly be expected from us; and our subscribers and readers are invited to make such use of this column as will tend to benefit themselves and the community. Both Queries and Replies will, however, be subjected, if unnecessarily long, to a strict curtailment.

Notification of Measles.

We are directed to apply to you on behalf of the Preston Medico-Ethical Society for information as to the number and names of large towns in which there is compulsory notification of disease, but in which the notification of measles is not required.

John Holden,
J. J. Byrne,
Hon. Secretaries.

[The notification of measles is compulsory in Blackpool, Hartlepool, Jarrow, Preston, Reading, Warrington, and Weymouth. —Ed.]

Examinations of the Sanitary Institute.

1. Could you kindly inform me where, and at what price, I could obtain "The Public Health Act"?
2. In your September number you have the answers to the Sanitary Institute Examination Papers. For whom are its examinations held? H. F.

[1. "The Queen's Printers," or official copies of the Public Health Act, 1875, are published and sold by Messrs. Eyre & Spottiswoode, East Harding Street, E.C., and by Messrs. P. S. King & Son, 5, King Street, Westminster, S.W. There is a useful edition of the Act bound up with an index, by F. Stratton, and with copies of the Public Health (Water) Act, Rivers Pollution Act, and Public Health (Interments) Act, published by Messrs. Knight & Co., 90, Fleet Street, E.C., price 3s. 6d.

2. You will find all information respecting the Sanitary Institute of Great Britain in the Sanitary Record Diary for 1890.—Ed.]

The Maintenance of Main Roads.

I shall feel obliged if you will forward me the address of the publisher and price of the "Report of the Best System for the Maintenance of Main Roads in the County of Hertford," by Urban A. Smith, A.M.I.C.E., a *résumé* of which appeared in your last issue of the Sanitary Record. S. H. W.

[Mr. Urban Smith's pamphlet bears the imprint, "Ordered to be printed by the Hertford County Authority." No price is stated.—Ed.]

Ventilation.

1.—What are the most effective and sightly means of ventilating a dwelling house?

2.—What are the most reliable means for testing house drains, &c.? Subscriber.

[1.—It depends upon all the circumstances of the case. If you refer to a house which you propose to build, you should provide well-proportioned inlet and outlet flues, arranging in some simple way for warming the air admitted through the inlet flues during very cold weather.

2.—The most reliable and most simple means of testing a drain is by water pressure. Block the drain at its lower end with a Botting's Screw Plug; fill the drain with water at a surface-trap at the highest end of the drain until the water rises up to the surface, then wait; if the plug does not allow the water to escape, but yet the level of the water at the surface-trap gradually lowers, it will be obvious that the drain connecting these two points is not watertight under pressure.—Ed.]

Infant Mortality.

1.—What is considered a high infantile mortality per 1,000 born?

2.—What is considered a low infantile mortality per 1,000 born?

[1 & 2.—The average annual rate of infant mortality in England and Wales during the 10 years 1879–88 was equal to 141 per 1,000 registered births. In the *third* quarters of those years (when infantile diarrhœa is most prevalent) the rate averaged 156 per 1,000. In 28 of the largest English towns the average annual rate, 1878–87, was 163 per 1,000, ranging from 139 in Portsmouth and Birkenhead, and 143 in Derby, to 189 in Blackburn, 203 in Leicester, and 218 in Preston. In the *third* quarters of the years 1878–87 the rate averaged 206 per 1,000.—Ed.]

An Ingenuous Plumber.

Would you kindly say if or where I could obtain a book that would give me the latest information on sanitary matters such as to inform me how to lay drains, where to put syphon traps, get levels and falls, and so on. I have been asked several times different questions, but I am sorry to say I do not understand the theory of it, and as I should like to, I shall be obliged if you could inform me in any way. I am anxious to learn as much as I possibly can, as the sanitary matters are very much taken up lately by the proprietors of property, and a plumber when sent for who does not understand the drain work, &c., when asked different questions, looks foolish. In fact a deal of people expect the plumber to know all about the drain work as though they had served an apprenticeship to the work. A Plumber.

[The best work for your purpose is Buchan's *Plumbing, House Drainage, &c.*, published by Crosby Lockwood.—Ed.]

ERRATUM.

The Exhibits at the Sanitary Exhibition, Worcester.

Our attention has been drawn to the fact that in our report of the above Exhibition in last month's issue, we stated that Messrs. Goddard, Massey & Warner were exhibiting a Disinfecting Apparatus, whereas the firm was not present, and, consequently, did not compete for any award. The Disinfecting Apparatus that was shown and that gained a silver medal was Washington Lyon's patent, manufactured and exhibited by Messrs. Manlove, Alliott, Fryer & Co., Nottingham. On investigation it appears that this blunder occurred through our reporter having visited the show quite early, and learning that space had been engaged by Messrs. Goddard, Massey & Warner, and finding their name in the catalogue (first edition), he gave them the benefit of any doubt, by inferring that their goods had been unavoidably delayed in arriving.

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ORIGINAL PAPERS.

THE CARRIAGE OF INFECTION.

By George Eastes, M.B.

One of those questions in sanitary matters that now and again exercise the attention of the public has lately received considerable notice in the daily press, under the somewhat sensational headings of "Infectious Doctors," "Licensed Carriage of Infection," &c. The subject was started in a letter to the *Times*, by Miss Frances Power Cobbe, who drew attention to the apparent inconsistency of legislating for the isolation of an infectious patient, and yet permitting the doctors in attendance "to carry everywhere and spread broadcast, without let or hindrance, the germs of his disease." She then asks: "First, whether a medical man ought to practise quite indiscriminately in infectious and non-infectious cases; and, if permitted to do so, what interval of time he is bound to leave between the visit to the infected and the non-infected patient? Secondly, whether, after personal contact with a patient in infectious disease, a medical man is bound to use disinfectants, or wash his hands, face, and hair and beard, and change all his clothing; or whether it may suffice if he dip the tip of his fingers in a basin, and perhaps thereafter run them through his hair?" She states her opinion that a doctor who wilfully neglects the proper regulations for his guidance in his dealings with infectious disease, and thus permits himself to convey an infectious disease to his patient, followed by fatal consequences, ought to incur severe penalties, including the withdrawal of licence to practise in future. Next follows the account of a sad case in which, according to Miss Cobbe's opinion, scarlatina was conveyed to a family by a doctor; and then comes her parting shot at the medical profession, "the fact that hundreds of doctors are strictly careful and conscientious ought not to prevent us from obtaining safeguards against those in whom those virtues can only be developed by the help of appropriate legislation."

We have been at pains to give the *ipsissima verba* of the charges, because the writer is not a too friendly critic of doctors and their ways, and can, as these words show, on occasion denounce their supposed professional backslidings with vigour. But further, the *Times*, in commenting on the letter, adopted, apparently without inquiry, the indictment, and remarked thereon: "Unless. fortunately, infectious germs were frequently sterile, it would be a miracle that every zymotic disorder was not imparted by any medical man in good general practice to the entire circle of the households he attends. English medical science is thoroughly aware of the danger, and suffers it to continue unchecked."

But is this sweeping charge true? Are doctors, whose lives are passed in fighting disease and death, and who are keenly alive to the nature of infection, so oblivious to the claims of their patients that they knowingly scatter amongst them the germs of infectious diseases, and thereby imperil the health, or even the lives, of those confided to their care? This is the indictment; let us examine the evidence favouring the opposite opinion. Firstly, it is the deliberate opinion of physicians who have attended very large numbers of cases of infectious diseases, in the lowest "slums" of London and other big cities, that it is well-nigh, if not quite, impossible for infection to be conveyed upon clothes, hair, or skin, to third parties in the manner indicated. They aver that they themselves constantly return to their own families directly from visiting infectious patients, but that it is practically unknown for any member of a doctor's family to contract those diseases from this source, though his children are as prone as other children to such maladies, and take them readily enough when the diseases in question are imported into their schools by their class-mates.

It must be remembered, too, that there is a vast difference between the visits of doctors (who, having usually at one time and another had the commoner kinds of infectious diseases, have become in their own bodies "proof" against them), and the visits of other persons who may not be so "protected." The doctor remains in the room just long enough to satisfy himself of his patient's condition, and to give directions for the treatment until his next visit; whilst other people going to a sick friend are apt to linger by the bedside. Moreover, should such visitors, being "unprotected," contract the disease, they at once become *foci* for its further spread; but the most that is urged against the doctors is that they may assist in spreading it indirectly by conveying the germs on their clothing, their hands, or their heads.

Again, it is the common practice of doctors, who, of course, are aware of the risk to be guarded against, to adopt very definite, and, as they believe, perfectly effective precautions against their conveyance of infection. But, "because they are not always proclaiming the measures which they think it necessary to take for the safety of others, they are accused by their enemies of selfish neglect." First and foremost amongst the expedients employed is that of wearing a waterproof dress in the patient's room. One for this purpose was devised some years ago by Mrs. Priestley, and may be obtained of J. C. Cording & Co., Piccadilly. Mrs. Priestley says of it, "For the general practitioner nothing could be more simple than to carry such an article on the box of his carriage, ready to put on when visiting an infectious case." For years past many doctors have adopted the plan of wearing, whilst they are in the patient's room, a long mackintosh overcoat reaching to the ground, to which a mackintosh cap forms an addition not to be despised. The medical officers of Schools' Association counsels the use of such a garment in its "Code of Rules for the Prevention of Infectious Diseases in Schools." Miss Cobbe has not apparently seen many of these mackintoshes in her peregrinations—it would have been curious if she had, but they nevertheless exist. A more valid objection on her part, however, is that a doctor attending 10 or 12 infectious cases would require as many coats, one for each house. But a mackintosh in the present day often forms part of a parent's outfit; hence a doctor is frequently able to "requisition" one at a patient's house for temporary employment, and after the illness, the coat having been disinfected, can be restored to its customary use.

Besides the wearing of such a coat, every doctor, probably now without exception, cleanses his hands thoroughly upon leaving an infectious patient. Many practitioners first use carbolic or other soap, then rinse the hands in clean water, and finally dip them in a disinfectant solution. For this latter purpose nothing is probably superior to the 1 per 1,000 solution of perchloride of mercury, or water rendered of the

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colour of brown sherry by the addition of some tincture of iodine, or a 1 per cent. or 2 per cent. solution of creolin; also, if the thermometer and stethoscope have been used, they should be disinfected in the solution used for the hands. Lastly, the medical attendant usually leaves his infectious patients to be seen the last in his daily rounds, and many practitioners afterwards walk a few minutes in the open air rather than ride in a close carriage. They also avoid seeing young people and children soon after such a visit.

The above are apparently all the precautions that should be required of a medical man when his non-infectious cases are ordinary medical cases, or surgical cases without a breach of surface. When there is a wound to be dressed, an operation to be performed, or a parturient woman to be attended (either just before, or during, or within a week after her confinement) the precautions taken by the doctor in the face of an infectious case are simply redoubled, as any tyro in medicine knows. Every student at our hospitals who is in attendance on cases of "labour" is absolutely forbidden to enter the dissecting-room or the post-mortem room; and the obstetrical physicians never tire of impressing upon the students of their classes the necessity of taking the utmost care to avoid any risk of conveying infection to lying-in patients. And these cautious observances begun in early student days become the confirmed habits of practitioners of maturer years. It is true that no doctor, if able to avoid it, would willingly go to an infectious case beforehand on the day of attending a patient in her confinement. If unfortunately, after having attended such a case, he should be summoned to a "labour," it is his duty to change at least his tailor-made garments, to scrub his hands, using a nail-brush thoroughly and plenty of soap, and finally to use the corrosive sublimate or other powerful disinfectant to his hands, scrubbing, by means of a second good nail-brush, the solution into all the irregularities of the fingers, hands, and nails.

In reply to Miss Cobbe's first query, therefore, one may say that, if he stringently adopts such precautions as those just quoted (but *solely* upon that condition, be it remembered), a medical man may practice indiscriminately in infectious and non-infectious cases. In fact, in rural parts where doctors are living at considerable distances from one another, a practitioner must attend all the cases in his district. In towns where doctors can, to some extent, pick and choose their patients without inflicting any hardship, it is a common event for a practitioner who has many midwifery cases to refuse attendance upon infectious patients, thus rendering assurance doubly sure. Partners also can, and do, arrange a distribution of their duties. It should be observed that the opinion now expressed concerning attendance on infectious and non-infectious cases is not that held by all practitioners; but it is the view which the large majority entertain. Some medical men, in fact, seem to be almost fastidiously careful on the point; thus, one who is noted for adopting every precaution that seems possible, writes, that "he would not attend a confinement if he had seen a fever case the same day."

In reply to Miss Cobbe's second question, it cannot be said that a medical man after personal contact with a case of infectious disease is *legally* bound to use disinfectants to his skin or hair, or to change all his clothing. Such laws are, indeed, scarcely required for the instructed. For cases of infectious disease are not all equally infective; the infectivity varies with the stage of the malady and other circumstances recognizable only by an instructed person. It would, consequently, as has been pertinently remarked, "be very difficult, we had almost said impossible, for the colleges to lay down hard-and-fast rules for the guidance of their members." But, undoubtedly, the great majority of practitioners do now adopt such precautions as those described above, impelled thereto, not by merely legal restraints, but by a clear sense of duty to their patients, as well as by a recognition of their personal interests.

Moreover, the bacteriological studies which are now pursued at the different hospitals, and the papers on the subject of infection with which the whole of medical and surgical literature constantly teems, are serving to impress upon doctors everywhere the necessity that behoves them under all circumstances and at all times of acting as the most vigilant foes of the pestiferous microbes.

COMPULSORY NOTIFICATION OF INFECTIOUS DISEASES.

In continuation of the list which we gave in our last issue (page 211), we append the names of those sanitary authorities that have since adopted the Infectious Disease (Notification) Act, 1889, so far as we have been able to ascertain them. From these lists it will be seen that the Act of last session has already been voluntarily adopted by the sanitary authorities of some 400 sanitary districts, having an aggregate population of 5,927,888.* If to this be added the metropolis, with its 40 sanitary divisions, and an aggregate population of 3,816,483, and the 59 large towns, with an aggregate population of 3,828,824, that have from time to time acquired the powers of notification under local Acts, we find that upwards of 13,000,000 of the total population of England and Wales will at the beginning of the New Year be under a system of compulsory notification of infectious disease.

Name of Authority.	Population (1881).	Date on which Act comes into force.
Urban Authorities:—		
Abingdon	5,684	Jan. 1, 1890.
Altrincham	11,250	,,
Ambleside	1,998	Dec. 9, 1889.
Appleby	2,000	Jan. 1, 1890.
Ashton-in-Makerfield ...	9,824	,,
Aspull	8,113	Dec. 2, 1889.
Bakewell	2,502	Jan. 1, 1890.
Baldock	2,326	,,
Bangor	9,290	Dec. 1, 1889.
Barking Town	9,108	Jan. 1, 1890.
Barrow-in-Furness ...	47,259	,,
Barton, Eccles, Winton & Monton	21,786	Dec. 9, 1889.
Beckenham	13,045	Dec. 2, 1889.
Belper	9,875	Dec. 1, 1889.
Benwell & Fenham ...	4,893	Jan. 1, 1890.
Bexhill	2,452	Dec. 16, 1889.
Bexley	8,793	Dec. 1, 1889.
Bodmin	5,061	Nov. 18, 1889
Bollington	3,963	Jan. 1, 1890.
Boston	14,941	,,
Bournemouth	16,858	Dec. 14, 1889
Bowness	1,855	Jan. 1, 1890.

* For the sake of comparison, the populations here given are those ascertained at the census of 1881. The present populations cannot be accurately estimated, but they have all considerably increased, that of London being now estimated at 4,331,738.

Name of Authority.	Population (1881).	Date on which Act comes into force.
Urban Authorities:—		
Brentford	11,810	Dec. 27, 1889.
Broadstairs	4,322	Jan. 1, 1890.
Bromley	15,154	Dec. 10, 1889.
Budleigh Salterton ...	1,908	Jan. 1, 1890.
Burgess Hill	3,972	Dec. 18, 1889.
Buxton	6,025	Jan. 1, 1890.
Cambridge	35,363	Dec. 1, 1889.
Cardiff	82,761	Dec. 16, 1889.
Carshalton	4,841	Dec. 1, 1889.
Cheadle & Gatley ...	7,338	Jan. 1, 1890.
Chesterton	5,706	,,
Chilvers Coton... ...	3,005	,,
Chiswick	15,975	,,
Chorley (Cheshire) ...	2,067	,,
Chorley (Lancs.) ...	19,478	,,
Church	4,850	,,
Cirencester	7,658	Dec. 9, 1889.
Cleckheaton	10,653	Jan. 1, 1890.
Colwyn Bay & Colwyn	2,418	,,
Compton Gifford ...	2,305	Nov. 12, 1889.
Conway	3,254	Jan. 1, 1890.
Coventry	42,111	,,
Crumpsall	8,154	,,
Darlington	35,104	Dec. 17, 1889.
Dwygyfylchi	2,122	Jan. 1, 1890.
Ealing	15,764	,,
Eastbourne	22,014	,,
East Grinstead... ...	5,000	,,
East Ham	10,706	,,
Ely	8,171	,,
Enfield	19,104	,,
Erith	9,812	,,
Exeter	37,665	Nov. 15, 1889.
Eye	2,296	Jan. 10, 1890.
Finchley	11,191	Jan. 1, 1890.
Folkestone	18,816	Dec. 18, 1889.
Garston...	10,271	Dec. 12, 1889.
Glastonbury	3,719	Jan. 1, 1890.
Gorton	33,096	,,
Great Crosby	5,033	Dec. 12, 1889.
Great Yarmouth ...	46,159	Jan. 1, 1890.
Halstead	5,804	,,
Harborne	6,433	Dec. 2, 1889.
Hayward's Heath ...	1,814	Dec. 9, 1889.
Heanor	6,822	Jan. 1, 1890.
Hebden Bridge... ...	5,007	,,
Hereford	19,821	Jan. 12, 1890.
Hertford	7,747	Jan. 1, 1890.
Heston & Isleworth ...	22,727	,,
Higher Bebington ...	1,152	Dec. 5, 1889.
Hoole	2,899	Dec. 19, 1889.
Hornsey	22,485	Jan. 1, 1890.
Horwich	3,761	,,
Houghton-le-Spring ...	6,041	Feb. 1, 1890.
Hurst	6,384	Jan. 1, 1890.
Huyton-with-Roby ...	4,060	Dec. 13, 1889.
Ilfracombe	6,255	Dec. 3, 1889.
Ince-in-Makerfield ...	16,007	Dec. 18, 1889.
Keighley	25,247	Jan. 1, 1890.
Kenilworth	4,150	,,
Kettering	11,095	,,
Kirkby Lonsdale ...	1,733	,,
Liskeard	4,586	Dec. 9, 1889.
Little Wootton... ...	1,159	Dec. 16, 1889.
Lower Bebington ...	4,050	Jan. 1, 1890.
Lymm	4,665	,,
Malvern	5,846	Dec. 7, 1889.
Mansfield	13,653	Jan. 1, 1890.
Mansfield Woodhouse...	2,618	,,
March	6,190	Dec. 7, 1889.
Millom	6,228	Jan. 1, 1890.
Morecambe	3,931	,,
Nantwich	7,495	,,
Neath	10,409	,,

Name of Authority.	Population (1881).	Date on which Act comes into force.
Urban Authorities:—		
Newton Heath... ...	29,189	Jan. 1, 1890.
Newton-in-Makerfield...	10,580	Jan. 10, 1890.
Normanby	7,714	Jan. 1, 1890.
North Bierley	20,935	,,
Northfleet	8,790	,,
Nuneaton	8,465	Dec. 9, 1889.
Openshaw	16,153	Dec. 16, 1889.
Ormskirk	6,651	Jan. 13, 1890.
Paignton	4,613	Jan. 1, 1890.
Penrith	9,268	,,
Penzance	12,409	Dec. 4, 1889.
Pontypridd	12,317	Jan. 1, 1890.
Queenborough... ...	982	,,
Radcliffe	16,267	,,
Redruth	9,335	,,
Rishton	4,056	,,
Rochdale	68,866	,,
Runcorn	15,126	Jan. 14, 1890.
Saffron Walden ...	6,060	Nov. 30, 1889.
St. Austell	3,582	Jan. 1, 1890.
Salcombe	1,826	,,
Sale	7,915	Feb. 1, 1890.
Saltley	6,422	Jan. 1, 1890.
Selby	6,057	,,
Sheerness	14,286	,,
Shepton Mallet ...	5,322	,,
Shipley	15,093	,,
Skipton	9,091	,,
Sleaford	4,965	Feb. 1, 1890.
Soothill Nether ...	5,240	Jan. 1, 1890.
Southend	7,979	,,
Southgate	9,500	Dec. 1, 1889.
South Gosforth ...	4,126	Jan. 1, 1890.
Southport	32,206	Dec. 14, 1889.
South Stockton ...	10,665	Dec. 15, 1889.
Spalding	9,260	Dec. 18, 1889.
Standish-with-Langtree	4,261	Dec. 16, 1889.
Street	2,514	Dec. 1, 1889.
Swadlincote	2,982	Feb. 1, 1890.
Tamworth	4,891	Jan. 1, 1890.
Taunton	16,614	,,
Teignmouth	7,120	,,
Tenterden	3,620	Dec. 16, 1889.
Tettenhall	5,000	,,
Todmorden	23,862	Jan. 1, 1890.
Tonbridge	9,317	,,
Totnes	4,089	,,
Tottenham	46,456	,,
Toxteth Park	10,368	,,
Tredegar	18,771	,,
Trowbridge	11,040	,,
Turton	5,635	,,
Twickenham	12,479	,,
Ulverston	10,008	,,
Upholland	4,435	Dec. 1, 1889.
Uxbridge	7,669	Jan. 1, 1890.
Walker	9,527	Dec. 15, 1889.
Waltham Holy Cross ...	5,368	Jan. 1, 1890.
Wavertree	11,097	,,
Wellingborough ...	13,794	,,
Whitley and Monk-seaton	1,800	,,
Widnes	24,935	,,
Windermere	1,269	,,
Winsford	10,041	,,
Wombwell	8,451	Dec. 2, 1889.
Worcester	40,354	Jan. 1, 1890.
Wrexham	10,978	,,
Rural Authorities:—		
Alresford	6,967	Jan. 2, 1890.
Altrincham	26,454	Jan. 1, 1890.
Amersham	16,684	,,
Anglesey	25,010	,,
Ashford, East	13,697	

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Name of Authority.	Population (1881).	Date on which Act comes into force.
Rural Authorities:—		
Banbury	18,048	Jan. 1, 1890.
Barnsley	20,616	,,
Barton Regis	13,155	,,
Basford	48,437	,,
Basingstoke	12,593	,,
Biggleswade	27,378	,,
Brackley	12,340	,,
Bridge	11,319	,,
Bridgnorth	9,394	Dec. 9, 1889.
Bromley	20,773	Dec. 2, 1889.
Buckingham	8,833	Jan. 1, 1890.
Burnley	21,672	,,
Cannock	15,441	Dec. 2, 1889.
Castle Ward	15,594	Jan. 1, 1890.
Caxton and Arrington	10,357	,,
Cheadle	21,805	,,
Chertsey	27,187	,,
Chesterton	28,343	,,
Chippenham	16,716	,,
Chorley	18,242	,,
Cirencester	13,652	Dec. 14, 1889.
Conway	8,146	Jan. 1, 1890.
Cosford	12,588	,,
Cranbrook	13,774	Jan. 4, 1890.
Croydon	21,570	Jan. 1, 1890.
Darlington	12,572	Dec. 2, 1889.
Daventry	14,655	Jan. 1, 1890.
Depwade	19,736	,,
Doncaster	24,182	,,
Dore	8,568	,,
Dorking	9,124	,,
Dover	6,543	,,
Drayton	14,849	Dec. 7, 1889.
Droxford	11,197	Jan. 1, 1890.
Dunmow	17,994	Feb. 1, 1890.
Durham	38,539	Jan. 1, 1890.
Eastbourne	5,742	,,
East Grinstead ...	18,581	,,
East Retford	13,523	,,
Eastry	12,419	,,
Eton	19,162	,,
Evesham	10,158	,,
Fareham	9,637	,,
Faversham	16,213	,,
Foleshill	18,497	,,
Frome	13,775	,,
Garstang	12,375	,,
Grantham	16,793	,,
Hailsham	13,405	,,
Halstead	11,201	,,
Hambledon	16,272	,,
Hartismere	13,495	,,
Hartlepool	2,167	Dec. 9, 1889.
Hartley Wintney ...	21,326	Jan. 1, 1890.
Haverfordwest ...	23,581	,,
Hay	8,306	,,
Henley	15,388	,,
Hertford	8,987	,,
Hexham	28,167	,,
Houghton-le-Spring ...	28,104	,,
Howden	12,182	Dec. 1, 1889.
Hoxne	12,601	Jan. 1. 1890.
Hungerford	17,802	,,
Hunslet	5,687	,,
Hursley	2,753	,,
Keighley	5,416	,,
Kendal	22,337	,,
King's Norton	19,367	,,
Kingston-on-Thames ...	15,114	,,
Lincoln	27,199	,,
Louth	23,161	Jan. 2, 1890.
Ludlow	13,544	Jan. 1, 1890.
Lutterworth	13,356	,,
Macclesfield	17,589	,,
Malling	22,745	Jan. 1, 1890.
Mansfield	16,807	,,
Mere	7,349	,,
Meriden	11,025	,,
Midhurst	13,933	,,
Monmouth	21,520	,,
Neath	28,670	,,
Newent	11,030	,,
Newhaven	8,607	,,
Newmarket	23,154	,,
Okehampton	15,267	,,
Orsett	16,480	Dec. 9, 1889.
Pateley Bridge ...	8,944	Dec. 1, 1889.
Penrith	13,974	Jan. 1, 1890.
Pocklington	15,461	,,
Potterspury	12,231	,,
Reigate	11,697	Dec. 3, 1889.
Ross	12,645	Jan. 1, 1890.
Rugby	17,309	,,
Runcorn	18,897	Dec. 9, 1889.
Scarborough	10,424	Jan. 1, 1890.
Sevenoaks	20,894	Dec. 9, 1889.
Sheppey	3,918	Jan. 1, 1890.
Shepton Mallet ...	10,457	,,
Shifnal	12,821	,,
Sleaford	19,564	Feb. 1, 1890.
Southam	10,282	Jan. 1, 1890.
Spalding	13,701	,,
Spilsby	27,887	,,
Stafford	10,568	,,
Stratford-on-Avon ...	14,442	,,
Strood	11,580	,,
Sunderland	14,562	,,
Swansea	29,404	Dec. 2, 1889.
Tamworth	14,509	Jan. 1, 1890.
Tarvin	11,186	,,
Taunton	19,368	Dec. 26, 1889.
Tendring	24,262	Jan. 1, 1890.
Tenterden	6,841	Nov. 20, 1889.
Thakeham	8,285	Jan. 1, 1890.
Thame	10,595	,,
Thirsk	12,848	,,
Thornbury	17,088	,,
Totnes	16,730	,,
Truro	25,363	,,
Uxbridge	19,881	,,
Wakefield	35,266	,,
Walsall	8,507	Dec. 10, 1889.
Wellingborough ...	23,148	Jan. 1, 1890.
Wellington (Salop) ...	20,267	,,
West Ward	8,225	,,
Winchester, New ...	10,617	,,
Wirrall	15,016	,,
Worcester	3,106	,,
Wortley	31,848	Dec. 8, 1889.
Wrexham	44,180	Jan. 1, 1890.
Total ...	4,124,455	
Population of Districts given last month ...	1,803,433	
Grand total ...	5,927,888	

Two cities that have been almost revolutionized in their sanitary conditions are Munich and Memphis. From being one of the most unhealthy of European cities, Munich has become one of the most salubrious. Memphis, which is still engaged upon sanitary reforms, including the introduction of an artesian water supply of admirable quality, and was formerly a notoriously unhealthy town, has to-day as low a mortality as any city in the country having the same population.

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THE GUINNESS GIFT.

THE consideration of the application of that portion of the fund allotted to Dublin presents some features of special interest, but, first, a word as to the generous donor. This act of munificence on the part of Sir Edward Guinness is only one of many proofs of a spirit of large-hearted charity which is an inherent gift of the Guinness family, and which has grown with their growth and increased with their riches.

In Dublin his donation affords an opportunity of splendid results if the active co-operation of the legislature, the local authority, and a sound commercial administration can be obtained. The question of the administration of the fund is under the most careful consideration of the trustees, but nothing further is decided on than that it will be worked on a thoroughly commercial basis. The trustees are satisfied that the wants of the poorer section of the working-classes can be fairly met, and a moderate dividend at the same time reasonably assured, and details on these points are now before them. At present it would be unfair to the donor, and injurious to the success of the proposed scheme, to say more, but the public may rest assured that important particulars of the administration of the fund are being thought out by those well qualified to form the best opinion on the subject.

The most striking characteristic of Dublin in the present day is the inequality of its buildings. Even in leading thoroughfares, imposing structures stand side by side with the most dingy and even ruinous premises. In less important streets this is more apparent. Thousands of pounds are invested in houses of business with the most forbidding surroundings. Important districts are practically cut off from each other by streets of filthy and worthless houses, which absolutely prohibit respectable traffic. Here and there one may see asphalted streets of neatly kept artisans' dwellings, surrounded by squalid tenement houses, with the family washing hung out of the front windows, and the surface of the street used as a general ashpit. The injury resulting to all classes is obvious. The commercial and physical prosperity of the city is stifled; the respectable artisan may live indeed in a healthy house, but still in the midst of filth—moral and physical. The foremost cause for this condition of things is the impossibility of legally acquiring house property, especially in the older districts of Dublin, absolutely worthless and often derelict, except on the most extravagant terms, either on voluntary or compulsory sale, on account of the extraordinarily complicated condition of the tenure of such property. The investigation of the title in these cases reveals a nest of dormant claimants, to satisfy whom an amount is required many times more than the outside value of the premises even in the best condition. The first requirement for the improvement of Dublin in this direction is a cheap, simple, and effective method of acquiring this class of property at its value. Existing legislation on the subject is cumbrous and patchwork, and general and local acts conflict and perplex. But further help is wanted from the legislature. Government should help those who help themselves, and they can give very effective aid with good security by advancing money on favourable terms to the trustees of the Guinness Fund for the development of their operations. The rates for Government loans for improving the dwellings of the working-classes vary from 3½ to 3⅝ per cent. interest with repayments of principal in equal instalments in from 20 to 40 years. If the rate of interest were slightly reduced to such a margin as could enable the loans to be made without loss to the public exchequer, and the period for repayment substantially increased, material assistance would be given to the scheme.

The cordial co-operation of the local authority is also essential to the success of the Guinness Fund, and we are certain that it will be freely given. The Corporation of Dublin has been foremost in the work of improving the dwellings of the working-classes. The ability and energy displayed by the late Mr. E. Dwyer Gray, M.P., warmly supported by his fellow members, in effecting the clearance of two of the most unhealthy areas in Dublin, under the Act of 1875, will not soon be forgotten, and there are at the present time not unworthy successors to him in the Municipal Council. That body is, however, naturally timid of further action under the Artisans' Dwellings Acts, owing to the large cost of the two improvement schemes already carried out, and although no new schemes have been promoted since the amendment of the law by the Acts of 1882 and 1885, there is still much room for improvement in the general legislation on the subject, and even for consideration whether a local act would be better suited to the peculiar requirements of Dublin. A complicated and expensive procedure deters energetic administration on the part of any local authority however willing, and there is no doubt that Dublin has paid an enormous relative value for the ground cleared under the Artisans' Dwellings Act. But if Parliament gives effect to the necessary alterations in the law on the subject, we have not the slightest doubt that the Dublin Corporation will do their duty in the matter.

The administration of the fund presents, however, the most difficult aspect of the entire question, and we are heartily glad to hear that a commercial basis has been resolved on. Any other would result in injury to every one concerned in the work, and not least to the working-classes themselves. No matter how carefully the details are worked out, the administration of the fund must interfere with private enterprise of some kind, and we hope it will efface from Dublin the race of house-jobbers. These are for the most part men of straw, who take houses on lease, frequently for a long term, from an owner who, for the prospect of freedom from the care of such property, accepts a low rent. The jobber fills the house with tenants, in defiance of all the principles of health and decency, spends only so much on it as the law, in the shape of the sanitary inspector, demands, and when at length—and a very short length, too—the structure requires substantial outlay, he lets it go to ruin, leaves it derelict, and looks about for another house, taking care, however, to keep a tight hold on his lease, in case something may turn up, and trusting that his landlord will not think it worth his while to recover possession of a ruin, especially if he is, in his turn, liable to the claims of a superior owner. His golden opportunity is an improvement scheme or a railway clearance; he then develops into a most deserving claimant, and through the medium of a mechanical arbitrator, or of a jury more charitable than just, reaps a rich harvest.

But there is no need for apprehension that a careful administration of the fund will injuriously effect existing agencies, public or private, which have done good service during the past few years in improving the homes of the working-classes of Dublin. If so,

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the fund would cause a two-fold injury; it would not only check the development of existing agencies, but it would absolutely fail to benefit the class for whom it is especially intended, viz. those of the labouring-classes whose wants in respect of improved house accommodation have not hitherto been met. The Guinness Fund Trustees will take every precaution to ensure that the buildings will be occupied by those so defined, and not by a superior class who can pay a higher rent. This is essential to the success of the scheme. If otherwise, the richer artisan would monopolise the new dwellings, and his poorer brethren would be left in their wretched abodes. At the same time, the effect of the operations of the trust, as far as the working-classes are concerned, will be altogether beneficial; the nature of the accommodation will be levelled up, the rent for it will be levelled down. And for Dublin generally, this endowment affords, as we have said, a splendid opportunity. If private philanthropists follow Sir Edward Guinness's example in so far as investing their money in this work to secure a moderate return without necessarily re-investing the income as he proposes, if the Government and the local authorities join actively in legislation and administration, we believe that at the end of the next decade Dublin will have improved vastly in appearance, in wealth, and in health.

THE SANITARY REQUIREMENTS OF THE MODERN DWELLING-HOUSE.*

By Francis Vacher, Medical Officer of Health, Birkenhead.

The late Prof. Laycock, of Edinburgh, was in the habit of introducing the subject on which he lectured to his students by saying that the Chair of Clinical Medicine was, as it were, the sun-chair of the Faculty round which all the other chairs might be represented as revolving. Public medicine, regarded as a study or a science, includes many studies and portions of many sciences; but the subject of subjects towards which all that it includes converges is the health of the individual, the family, the community. What environment shall the individual and family have? or, in other words, how shall they be housed wholesomely? is the constant question for all medical officers of health, the sun-question round which most of the inquiries we have to conduct may be said to revolve.

The principles which should guide us in determining the requirements of the modern dwelling-house are scarcely in dispute. All admit that the dwelling-house should be built of sound material, on a clean foundation, that it should be well aired and dry, well lighted and warmed, that it should have a pure water supply, conveniences for bathing, washing, and cooking, that efficient sanitary accommodation should be provided, and (last not least) that all drains should be external to the house, and all direct connection therewith should be broken. On this we are agreed. It is when we get beyond general principles, and specify details (as we are almost daily required to do), that differences in opinion and practice begin to appear. Now it has appeared to me that the present gathering of medical officers of health would afford a particularly favourable opportunity for discussing the details of the sanitary requirements of the dwelling-house. I propose, therefore, very briefly to give my own views on this matter, not as being specially worthy of respect, for I lay claim to no special knowledge or experience, but rather by way of opening a discussion on the subject selected. Some one must lead in every discussion, and if I am first to-day it is only *primus inter pares*. My opinions on plumbing and drainage details are not unalterable. I have modified them before and shall modify them again on cause shown. I trust we may have a useful and improving debate.

I propose to state briefly what I hold necessary in respect of the various requirements, beginning from the simplest.

Rain Conducting.

1. That rain-pipes be of cast-iron, of good quality and free from flaws, and of 3 to 4 inches in diameter.
2. That they be galvanized or oxidized.
3. That they be securely fixed parallel to the wall and about an inch from it.
4. That rain-gutters be of metal, securely fixed, of sufficient capacity, and have sufficient fall. That if of iron they be galvanized or oxidized.
5. That all rain-pipes and gutters be external to the house.
6. That every rain-pipe deliver on a trap or channel or into a receptacle for collecting rain-water.
7. That no store rain-cistern have an overflow pipe (trapped or otherwise) into a drain or sewer.
8. That no rain-pipe be in any case utilized to ventilate a soil-pipe or drain or sewer.

Trapping Yard and Area Drains.

1. That traps for this purpose be of cast-iron or glazed stoneware or earthenware, of good quality and free from flaws.
2. That such traps, if of iron, be galvanized or oxidized.
3. That every trap have a seal of not less than 2½ inches in depth, *i.e.* more than 2½ inches in depth of water would have to evaporate before the water-seal would be broken.
4. That every trap be provided with a grating or perforated lid to guard the entrance, hinged or movable to allow the trap to be readily cleansed.
5. That every trap be set level and securely jointed to the drain it is to guard.
6. That traps used for this purpose be of the pattern known as gulley-traps, square or round.

Sink Waste-Pipes.

1. That sink waste-pipes be of lead, not less than an inch in diameter, securely fixed and protected with a grating.
2. That every sink waste-pipe be properly trapped and disconnected on a trap external to the house.
3. That the sink-trap be of the pattern known as S trap, having a water-seal of not less than 2½ inches, and having an access hole to cleanse it provided with a screw stopper.

Bath and Lavatory Waste and Overflow-Pipes.

1. That these pipes be of lead, not less than an inch in diameter, securely fixed and protected with a grating.
2. That every such waste-pipe be properly trapped with a S trap, and disconnected on a trap external to the house.
3. That the overflow-pipe be connected with the waste-pipe between the bath or basin and the S trap.

* A paper read at the Combined Meeting of the Members of the North-Western and Yorkshire Branches of the Society of Medical Officers of Health.

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Water-closet Fittings.

1. That the whole apparatus be of the simplest description, of good quality, and jointed and fitted in a workmanlike manner.

2. That basin and trap be of glazed stoneware or earthenware, if possible all in one piece.

3. That the trap be a S trap, 4 inches in diameter, having a water-seal of not less than 2½ inches, and an easy curve.

4. That the apparatus be not boxed in with wood or otherwise.

5. That every closet be flushed with a separate service cistern, the service-pipe being not less than 1¼ inch in diameter, and delivering not less than 2 gallons at each flush, directed into the mouth of the trap.

6. That every closet in a house be against an external wall, and deliver into a ventilated soil-pipe or ventilated drain external to the house, and that the short pipe leading from the closet-trap be ventilated into the soil-pipe ventilator.

Ventilating Soil-pipes.

1. That every soil-pipe have a ventilating pipe of the same diameter as the soil-pipe.

2. That the ventilator be of lead or iron, properly jointed, and securely fixed, parallel with the wall, but a little removed from it, and always external to the house.

3. That such ventilator, if of iron, be galvanized or oxidized.

4. That every ventilator be carried up at least 2 feet above the roof eaves, and that its termination be not near any dormer window or skylight.

5. That a fresh-air inlet not far from the base of the soil-pipe be provided. As this inlet occasionally serves as an outlet, it should not be near enough to the house to cause the slightest effluvium nuisance.

House Drains.

1. That the drains be laid wholly outside the house.

2. That these drains be made of glazed stoneware or earthenware pipes, unwarped and free from flaws and cracks, and provided with flanges.

3. That the pipes be properly laid in a bed of good concrete, with a sufficient fall and tightly jointed with cement, the pipes being in no case less than 4 inches in diameter.

4. That when a connection has to be made, a suitable junction pipe be used, such junction in no case being rectangular.

5. That the soil-pipes, yard-traps, &c., be properly connected with cement joints, suitable curved pipes and junction pipes being used as required.

6. That when necessary, a grease-trap be provided and fitted in an accessible position.

7. That just beyond the fresh-air inlet already referred to a suitable trap should be introduced, the trap having a water-seal of not less than 2½ inches, and being accessible for cleansing.

8. That the drains of every house deliver separately into a sewer.

Water Supply.

1. That every house not having a well of wholesome water have a supply direct from the main (tap being marked MAIN), and a service to a store cistern.

2. That the service-pipe be at least 1 inch in diameter.

3. That the store cistern be of slate, or stone, or galvanized or oxidized iron, or of suitable material lead or zinc lined, holding not less than 100 gallons, and be readily accessible for cleansing.

4. That the cistern overflow pipe be made to terminate externally as a warning-pipe, and the flow be regulated by a ball-cock.

5. That the cistern have a waste-pipe disconnected on a trap external to the house.

Hot-Water Apparatus.

1. That the high-pressure boiler at the back of the kitchen fire be of copper or iron, quite smooth inside, the angles and corners being rounded off so that no air may lodge within.

2. That an access hole properly protected be provided for this boiler.

3. That a pipe terminating with a screw-top (not a tap) be taken from the lowest point of the boiler to empty it previous to repairs.

4. That a pipe be taken from the highest point of the boiler as an outflow for the cylinder, and that the return-pipe (entered at the top or the back) be continued within the boiler by a short length of pipe.

5. That the hot-water cylinder be of copper or zinc, and be fixed near the boiler on a higher level, access to the inside, securely protected, being provided.

6. That the boiler outflow and return pipes be connected at the bottom of the cylinder, and that the cold supply from the store cistern be led in here.

7. That the expansion pipe be taken from the highest point of the cylinder, and led up to terminate close to a chimney commonly in use.

8. That the hot-water supplies required be branched from the expansion pipe at an acute angle.

This completes my statement of sanitary requirements in a model dwelling. How incomplete the statement is no one can be more conscious than I am myself. Suggestions enabling me to vary the statement or add to it are invited. The more I receive the better I shall be pleased.

Some so-called conveniences commonly provided, such as housemaids' sinks and ashpits, I have made no mention of, as I disapprove of them altogether, and consider that in any form, and however safeguarded, they are objectionable.

STABLE VENTILATION.

By Fitzpatrick Eassie, A.V.D., Aldershot.

In expired air there are certain organic impurities which bear a definite ratio to the amount of carbonic anhydride. It is for this reason, rather than from its own intrinsic harmfulness, that this gas has been selected as an index of atmospheric purity. If an air space were inoculated with carbonic acid, unattended by its satellite impurities, it would be found that both men and animals could tolerate a greater percentage than that which they are ordinarily called upon to breathe. The limit of purity in an air space is that the carbonic acid shall not exceed ·06 per cent.; but in a properly ventilated stable it will only be present in the proportion of ·04 parts per hundred. It is estimated that a horse adds from 1·2 to 1·3 cubic feet per cent. of CO_2 per hour. His average respiratory capacity (tidal) is about a cubic

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foot, and he breathes from 14 to 25 times per minute. The gas would accumulate, according to the calculation of Professor Frederick Smith (of the Army Veterinary Department), to "from 156 to 180 cubic feet in twenty-four hours, or if converted into carbon would give us a solid block weighing from five to six pounds. Taking an animal in health we find 100 parts of expired air contain 13 instead of 21 parts of oxygen, and 4 or 5 per cent. instead of ·03 or ·04 per cent. of carbonic acid, and in addition there is a variable amount of watery vapour containing organic matter" (Veterinary Hygiene).

Of recorded analyses of CO_2 in stables: "One by Leblanc, who found in a stable at the Ecole Militaire ·70 per cent.; two by the late Dr. de Chaumont, who found ·10 and ·05 per cent.; two by Mäsker, who found in a stable at Gottingen ·85 per cent. and 1·70 per cent.; and two by Dr. Angus Smith, who found ·083 per cent. and ·087 per cent." (Veterinary Hygiene).

The following are Professor Smith's own results expressed in parts per thousand:—

Mean of 14 analyses - -	1·5700
„ 14 „ - -	1·3200
„ 25 „ - -	2·1000
Largest amount found -	2·6585
Least „ „ - -	·5716

We have now to consider other sources of impurity, the same author supplying us with most interesting collateral material. He estimates the amount of fæces and urine excreted by an average horse in twenty-four hours at: fæces 40 lbs., urine 2 gallons.* Of these excreta "quite half the fæces are left in the streets and, on the other hand, at least three-fourths of the urine is deposited in the stable. . . . The horse can only urinate at rest, and it follows that the opportunity for getting rid of this secretion whilst out of the stable is not always afforded him, and so it happens that the very excreta which contributes the greatest amount of impurity to the air of stables is almost wholly deposited in them" (Veterinary Hygiene).

The skin after exertion usurps temporarily the functions of the kidneys, exhaling the constituents of urine; but as this is only a compensatory action it need not be looked upon as an added impurity.

Urea is very readily decomposed, particularly when in contact with decaying animal matter, the urine becoming firstly alkaline and finally evolving free ammonia. The slightest elevation of temperature intensifies this action and concurrently with these changes a similar disintegration of the solid fæcal matter is going on, the result of which is added vitiation in the shape of albuminoid ammonia, sulphuretted hydrogen, and other complex organic impurities.

To get rid of these effete materials and to renew the air supply are the objects of ventilation, to effect which without causing draughts it is primarily necessary to have sufficient air space. My own estimate of the amount of space allotted to horses individually, whether in a stable or loose box, is an area equal to the cube of 12 feet, and for a stall I consider the following a convenient allotment:—

Length.		Breadth.		Height to eaves.	
20	×	6	×	12	=1440 (cubit feet),

advocating at the same time an additional triangular roof space the height of which would be half the span. This would bring the combined area approximately to the standard I have indicated. Of the length in the above equation six feet are taken up by the passage, 2 feet by the manger, and the remaining is the absolute length of the stall.

The ventilation of stables, as compared with the ventilation of other buildings, ought to be comparatively a simple affair. It occasionally happens, however, that, owing to the nature of the building itself, or on account of its surroundings, one has to resort to means of artificial ventilation. For instance, a storey above may, and often does, exclude the possibility of a louvre, or the presence of an attached building prevents ventilation on that side. Again, in stable ventilation we depend more upon the mechanical displacement of the used-up air by the force of air judiciously admitted than upon the phenomenon of diffusion as induced by heating media. A considerable amount of aerial diffusion is, however, maintained by the natural heat radiated from the bodies of animals, and this is of course a very valuable adjunct to ventilation. The problem then is to establish a limited continuity with the external air in such a manner as to avoid draught. To begin with, whatever the conformation of the building may be, a row of air-bricks, a few feet distant, should be fixed in the eaves. In addition to these, air-bricks may be built-in underneath the mangers, provided—and this is very important—that the air-currents so procured are distinctly subordinate to more powerful currents above.

A louvre running the length of the building with boards inclined sufficiently to keep out driving wet and snow, is a means of ventilation which, when practicable, should invariably be adopted. Foul air accumulates at the summit of a building as a result of its own expansion. This is most thoroughly removed if there is a louvre, and the void is filled up from below. General Sir Frederick Fitzwygram very properly suggests that the louvre boards should be replaced by rough glass plates, which is a most valuable suggestion, as light in the stable is utterly essential. Before this necessity was established the percentage of cases of so called specific ophthalmia amongst horses was enormous, the disease occasionally becoming epizöotic. Now-a-days one rarely meets a case of the disease* at all. There is no doubt that the etiology of the complaint was to be found in the utter absence of anything like hygienic conditions in general and insufficient light in particular.

Windows must be looked upon as most important means of ventilation. They are of all patterns, of which the sash variety is the least to be recommended. Windows working on a central horizontal pivot are very good, but it is important to keep them so inclined that they deflect the incoming air-current towards the roof. The most approved pattern of window is that which fixed inferiorly is let down by a cord from above. A window should be fixed above each horse's head. Doors should open at the extremities of the passage, and not be cut in the long axis of the stable.

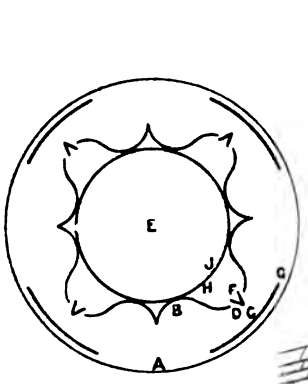
Under some circumstances, owing to peculiarity of structure or other causes, recourse must be had to

* Professor Varnell's Experiments at the Royal Veterinary College, London: Fæces 49 lbs., urine 20 lbs. (2 gallons approximately). Colin's calculation, 3 lbs. 7 ozs., is obviously insufficient.

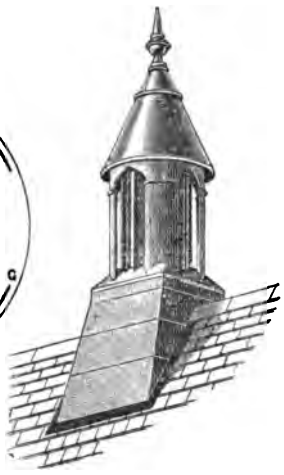
* Panophthalmia, mood blindness, general inflammation of the structure of the eye with opacity of the cornea, and occasionally cataract.

artificial means to supplement the ordinary natural ventilation of stables. Messrs. Boyle, the great ventilating engineers of Holborn Viaduct, have very kindly furnished me with several plates of their own patents, a description of which will explain the manner in which air-currents are induced and intensified.

The crude idea of a cowl is a projecting vertical pipe covered by a hollow cone. The aspirating force of the wind across the mouth of this pipe begets a current which traverses the pipe from below. The air-pump ventilator of Messrs. Boyle & Sons is really what its name implies it to be, and it is most efficient for stable purposes.



Plan.

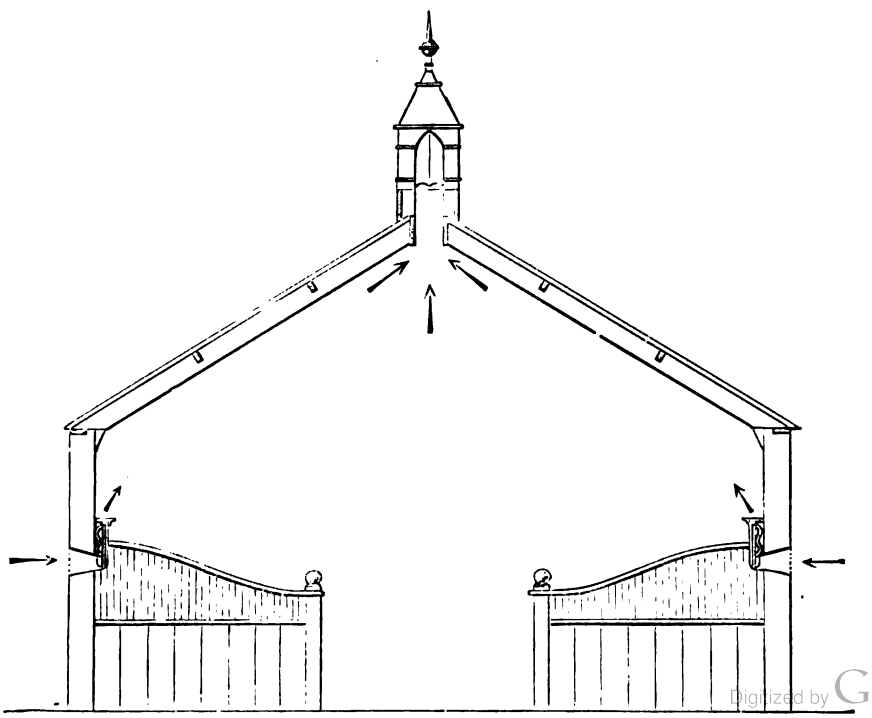


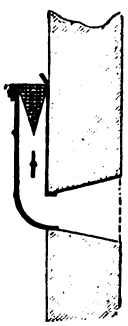
Exhaust-air Pump Ventilator.

A indicates the opening into which the wind passes and impinges upon the deeply curved bell-mouth arrangement B in which a large body of air is collected, and forced into the narrow annular space C, at which point, owing to the compression of the air, which cannot otherwise escape or free itself, it attains a greatly accelerated velocity, and in passing over the slit D creates a powerful induced current, exhausting the air with considerable rapidity from the central chamber E. The foul air immediately rushes up the shaft to supply the place of the air extracted, and is, in its turn, drawn off, thus creating a powerful and continuous upward current in the shaft connected with the stable. F, diaphragm to deflect the air over slit D. G, curved baffle-plate, or guard to protect the slits opposite, concentrate the current and prevent it from expanding and being deflected backwards without passing over the slit D. H, space dividing the exit slit from the central chamber.

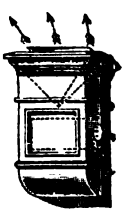
The shaft attached to the ventilator may be made of any diameter required; but the extracting power of a properly constructed roof ventilator lies exclusively in the head, and is solely determined by the size of the same and not by the diameter of the shaft attached to it. In fixing the ventilator a wood base or frame is placed on the ridge and covered with zinc or lead to make it water-tight; the ventilator is then slipped over the top and fastened with a few nails (see Messrs. Boyles' catalogue). This outlet ventilator is particularly well adapted for stables having an apartment or a loft above.

The accompanying elevation of a stable shows the Air Pump Ventilator *in situ*, and the inlets are made both as brackets and tubes, the drawings almost explaining themselves. The section shows how the bracket is fixed in the wall. The funnel-shaped opening in the wall accelerates the current, causing a wider diffusion on entering. Each bracket is fitted with a regulating valve (shown in section), a sieve air-filter, and a deflecting shield, the object of which is to send the current well into the building.





Section of Air Inlet Bracket.



Ornamental Air Inlet Bracket.

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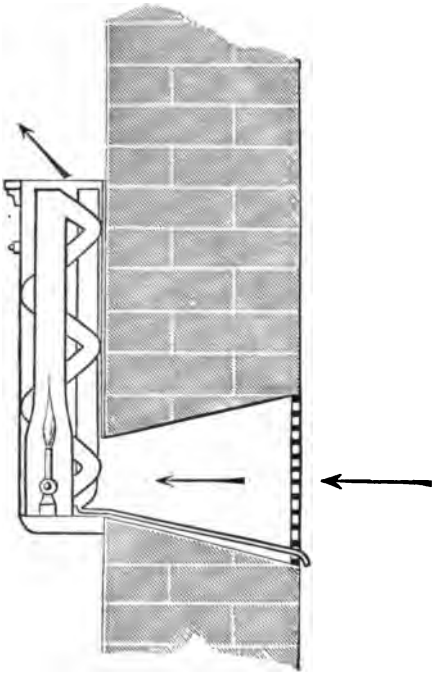
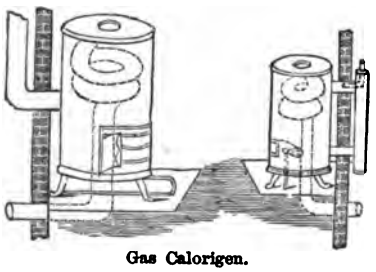
Messrs. Boyle have, by a most ingenious contrivance, applied, in an air-inlet, the advantage of ventilation by artificial heat at a very moderate cost for maintenance. Within the bracket is a "Bunsen Burner" fitted in a copper cylinder. The air from this chamber is not permitted access to the stable but is ventilated by a separate pipe to the roof. Surrounding this Bunsen chamber is a coil of piping which leads into the stable from the air outside. The air entering is thus warmed without coming into contact with the flame, and the added vitiation consequent on the combustion of the gas is avoided. "By this arrangement the air supply can be raised from a temperature of 30° to 130°, and the cost of the gas consumed in raising the incoming air from a temperature of 40° to 100° is less than one farthing per hour, this being effected with the air passing through the tube at a velocity of 300 feet per minute, or 18,000 per hour."



The bracket should be fixed low down, a very convenient location being beneath the manger. "Where the tubes are placed against wood work all chances of fire may be avoided by fitting them with a double casing or jacket, and filling in the space between with asbestos or other non-conducting material."

For heating stables nothing can be better than a "GasCalorigen," which is constructed on precisely the same principle as the appliance which has been just described. The Calorigen consists of a cylinder about 3 feet high and of a foot and a half diameter, in which a circle of gas flames burn. This chamber has no communication with the stable, but is ventilated, like the Bunsen chamber, to without. A 3-inch pipe enters the Calorigen from the external air, coils upon itself several times, and finally pierces the drum at the top of the cylinder. It is both a heating means and an important means of ventilation by heat. The radiation of heat from the cylindrical casing is, after a time, very considerable.



Gas Calorigen.

The air of the stable should be kept as nearly as possible at a temperature of 60° F., a double roof enclosing an air space being of great value for maintaining this mean temperature in the extremes of climate. It is of the highest importance to avoid sacrificing the fresh air to keep up the temperature. Warmth thus derived is worse than useless, and it is far better, even in the most trying cold, to keep horses well rugged and trust to the increased oxidation of their own tissues, rendered easy by a plentiful supply of fresh air and good food.

The combustion of coal gas or oil is a drain upon the oxygen supply, which cannot be entirely overlooked, when we consider that a litre of coal gas exhausts the oxygen from eight litres of normal air, or that an oil lamp burning 154 grains of oil per hour is responsible for producing upon an average half a cubic foot of carbonic acid. This would lead one to appreciate the value of those contrivances, which, whilst affording heat, at the same time avoid the attendant vitiation.

It is important to remember that even the most perfectly ventilated stable may be handicapped by bad drainage. It is a safe rule to avoid underground drains in the stable altogether. With an impervious floor, properly inclined, underground drains are by no means necessary. Stable pavement must be impervious, should be easily cleaned, afford a good foothold, and should preferably be laid on a substratum of concrete. The surface channels incline through occasional arches in the wall to deliver by trapped gullies into a properly laid drain outside the stable.

Assuming that an underground drain already exists, there may be many faults to remedy. The drain must be trapped at every opening by a syphon of an approved pattern, and the drain again disconnected from the sewer. To effect the latter object a disconnection chamber must be built at the sewer end of the drain, the object of which is, not only to prevent sewer air from entering the drain, but likewise to admit an air current which, after traversing its length, is ventilated at its distal extremity by a 3-inch pipe, terminating 6 feet above the roof. The aspirating idea is here again in force, and a strong air current is induced which sweeps with it constantly, in its upward course, impurities which would otherwise remain latent in the drain.

It is essential again that constant flushing should maintain the water in the traps. If the water seal is permitted to evaporate below the dip line, nothing intercepts the drain air from the stable. Similarly, if the water remains in the syphon unrenewed, it in time becomes charged with gas, and passively permits it to go, first slowly and then swiftly, through the trap. To ensure constant flushing, an automatic flushing box of a capacity of 30 gallons may with advantage be fixed at the head of the drain.

Bedding, particularly peat moss and saw-dust litter, often causes annoyance by stopping up the drains; in fact, everything combines to render underground drainage in the stable a thing to be, if possible, avoided.

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THE CONSTRUCTION AND LAYING OF HOUSE-DRAINS.

By J. R. ANDERSON, C.E.

Cert. Surveyor San. Inst. Gt. Brit., and Mem. San. Inst.

THE construction of house-drains is a work which requires very great care and skill, both as regards the method of laying and the selection of suitable materials.

The first matter in the construction of a drain which should be considered is whether or not means are afforded for placing it entirely outside the dwelling; if so, then it should be removed to the greatest distance possible compatible with convenience. In towns, however, where houses are built in continuous blocks, or streets, the construction of the drain inside the dwelling, in most cases, becomes a matter of necessity. It is indisputably better to construct the drain outside, since the risk of deleterious gases gaining access to the house by way of it is reduced to a minimum; but, at the same time, if care is bestowed to see that the work is carried out in the best possible manner, and suitable tests applied to it, there is little danger to be feared in causing the drain to pass within the house.

The materials now generally employed in the construction of house-drains are stoneware and cast-iron. The use of bricks for this purpose is probably now discontinued, since to make a thoroughly good drain with these is practically impossible. Since the selection of suitable materials forms such an important factor in the success of this work, it is imperative that much care and attention should be devoted to it. Good stoneware pipes should be perfectly straight, truly circular in section, smooth, and covered with a good glaze, tough, free from cracks and flaws. In addition, these should be non-porous, of equal thickness, and, when struck, ring clearly. Pipes of this description for house-drainage are usually made in lengths of two feet six, while those of cast-iron are made in lengths of six and nine feet. Cast-iron in this respect is far superior to stoneware, since a much less number of joints is entailed, and therefore less risk of settlement in course of years.

The internal surface of a cast-iron pipe is, however, more rough than that of a stoneware pipe. This fact is due to the way in which iron pipes are made, the cores used in the process of casting being made of sand through which asperities are produced. The roughness is somewhat objectionable, because sewage matter when passing through the pipes would probably be retained in small quantities and cause fouling to take place. Moreover, in consequence of friction, the flow through the drain would become somewhat impeded.

Iron pipes for drainage purposes are usually coated with a rust-proof solution, such as Dr. Angus Smith's, or protected by what is known as the Bower Barff process. The former is a preparation from tar, and is used at a high temperature with oil. The latter process consists of covering the pipes with a magnetic oxide, formed at a high degree of temperature. In either case, before the pipes are coated it is necessary that they should be well cleaned.

Iron pipes can now be obtained with an internal lining of white enamel which presents a smooth surface to the sewage; thus cancelling, in a great measure, the objection previously brought against iron in the matter of roughness.

In order to determine the size of a drain to suit the requirements of a case, it is necessary to make certain calculations, taking into consideration various items, amongst which the following are the most important: the amount of rain-water to be conveyed away, the number of water-closets, sinks in existence, &c., together with the number of inhabitants of the house now in question, and the amount of fall possible to get for the drain.

By this means it is possible to determine the diameter of the pipe necessary to carry away the tota quantity of sewage matter. For all ordinary houses, however, by practice it is found that a drain of four inches diameter is quite sufficient, and for a large building or public institution, a drain of six inches diameter.

It is advisable, however, to make use of, in ordinary work, a pipe of larger bore than four inches, although the latter in some instances works exceptionally well: six inches is the size which is most largely adopted.

Better still than either is five inches, and it is now possible to obtain stoneware pipes of this diameter, as also iron. Messrs. Doulton & Co., of Lambeth, now manufacture five-inch stoneware pipes.

A drain of four inches diameter, if so small a size be desired, should be constructed in connection with a soil-pipe of a smaller diameter, as, for instance, three inches and a half. With such an arrangement, it is made possible for any improper substance gaining access to the soil-pipe, and of or about the same size as it, to pass clearly through the drain, which, in the case of the two pipes being of equal size, would not probably be so. In the same way, therefore, with a four-inch soil-pipe, a five-inch drain at least should be constructed.

There are still many persons who advocate the adoption of large-sized drains, on the score that a better result is obtained as regards ventilation and oxidation; that is to say, within the drain there exists a large space for the accumulation of air, by which the foul gases given off by the sewage might be oxidised and made innocuous. On the other hand, however, with a small pipe there is a greater scouring power stored up in the flow through it, or the flow is more concentrated; the drain, as a consequence, therefore, is better cleaned and made much less foul than a large one would be.

In order that drains may be self-cleansing it is necessary to give them a certain amount of fall, which should be evenly distributed throughout. The rate of inclination, in any case, should be such that would produce a velocity of not less than three feet per second. The rate of fall is governed by the depth of the public sewer or other outlet into which the drain terminates; so that, in all cases, it is not possible to get the requisite amount of inclination. In such cases, to make the best of the available fall, the drain should be brought up as close as possible to the ground-level at the upper extremity. In actual practice, a fall of 1 in 30 is a very desirable one, and is found to give a very good result. When the inclination is much less than the before-mentioned one, it is desirable to provide a means by which the drain might be periodically cleaned. This means is generally furnished by the adoption of an automatic flushing-tank fixed at the upper end of the system.

After the pipes have been selected for use with which to construct a drain, the question which then arises to be settled is the course which the drain should be made to take. In every case the course should be as straight as possible—*i.e.* without bends.

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On deciding upon a proper course, this should be clearly marked out by pegs or stakes driven into the ground, or some other suitable method, to enable the workmen to keep to it closely. The trench should then be dug to the necessary depth, and of such a width that would allow a man to lay and joint the pipes with ease.

In any case where the drain is made to pass through the house the trench should be levelled, and stakes driven into the bottom of it at convenient distances, those projecting above it to a height equal to the thickness of a bed of concrete on which to lay the pipes. A quantity of good Portland cement concrete should then be carefully prepared, and the trench filled with it to the height of the pegs, after which carefully levelled and brought to an even surface. In any case a bed of this character should not be less than six inches thick, increasing it to suit the various requirements of each case; as, for instance, in the case of a treacherous or unstable ground.

The foregoing is essential in the use of stoneware pipes, those made of iron not requiring such a foundation in all cases.

The pipes should then be laid in the trench and jointed one by one, using great care to see that all are supported in such a manner as not to cause any undue strain to be put upon the sockets, thereby causing displacement or injury to take place in the jointing material.

As regards the jointing material for pipes, several patent joints are in existence, about some of which reference will hereinafter be made. Neat Portland cement, however, when properly used, makes a thoroughly sound and reliable joint. The best way in which cement can be used in pipe-jointing is with the fingers, by which means it is possible to well fill the sockets. In the use of cement the bestowment of considerable care is necessary in order that portions of cement should not be allowed to remain inside the pipes—that is, at the joints.

After laying, the inside of each pipe should be carefully wiped out with a wad kept for the purpose, to remove any asperities of the above nature. If this point is not attended to, the small portions of cement squeezed through between the pipes in the process of jointing become hard, and, in practice, tend to arrest particles of sewage matter, this forming the nucleus of a stoppage.

Oftentimes in the neglect of this respect actual stoppage has taken place. In many instances, as a preventive against the above, a ring of spun yarn is inserted in the socket of each pipe. As the work proceeds, in order to test its soundness, the pipes should be plugged at the lower end and filled with water. The most convenient place for the insertion of the plug is at the disconnecting trap, and, in the case of a partially made drain, it is found convenient to temporarily insert in the upper length a bend, turned up in order to retain the water. Any imperfection in the completed work should be put right before further proceeding. On completion, the drain should be again plugged and filled from end to end with water, allowing it to remain in such condition for some time, examining at intervals the various joints in connection with it.

At the outset, in order to prevent inconvenience, it is well to obtain tested pipes, that is to say, pipes which have been previously tested by a hydraulic pressure and found to be absolutely sound and watertight, since it is often the case that without this precaution some of the pipes, on the application of the water test, allow particles of water to pass through them—a defect which is technically called "sweating."

A drain, having been tested and found sound, should be covered with a thickness of concrete before filling in the trench, which work should not be attempted until the concrete has become set. When this is done carefully, the disturbance of the pipes in the open trench on filling in is prevented, and, in addition, two drains in one as it were are formed, by which a thoroughly good job is effected.

In regard to the glaze of pipes, a salt glaze is found to be about the best kind, because it permeates the pipe probably to a greater extent than does any other.

The method adopted in jointing iron pipes is as follows:—A ring or two of spun yarn is placed around the socket of the pipe and caulked with a proper tool. Molten lead is then run in, after which it is caulked in order to expand the lead after contraction—*i.e.* on cooling—so that any irregularity or open space in the joint is properly filled with material. It is the best plan to run in additional lead after the first caulking has taken place, to obtain further security.

Another method of connecting iron drain-pipes which is sometimes adopted is by making what is known as a rust joint. It is effected by using a composition of iron turnings or borings, salammoniac —*i.e.* nitrate of ammonia, a little sulphur, and water. This form of joint is one not to be recommended, since it becomes a very difficult matter to separate the pipes, when required, without cutting or breaking them.

Whether stoneware is superior to iron, or *vice versâ*, is a somewhat difficult question to deal with. Without doubt iron in some instances is more desirable than stoneware, and again *vice versâ*. Any way, in connection with iron there is this great point in its favour, that the pipes, when laid, are less liable to settle, in consequence of the smaller number of joints. It is necessary, however, to well consider the requirements of each individual case, and select the material most suitable to comply with these.

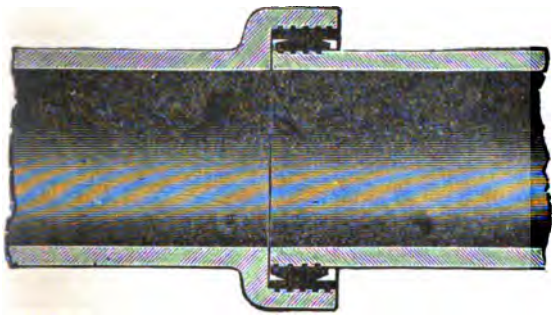
With regard to patent joints, there are many kinds. One form of joint, which is now well known and much used, is Stanford's. It is an excellent form of joint, and pipes provided with this can be easily put together, inasmuch as less skilled labour is required in laying and less time is occupied. The joint consists of casting on the spigot and in the socket of each pipe a ring of a bituminous substance, and spherical in form. The joints allow a certain amount of settlement to take place without breaking or parting.

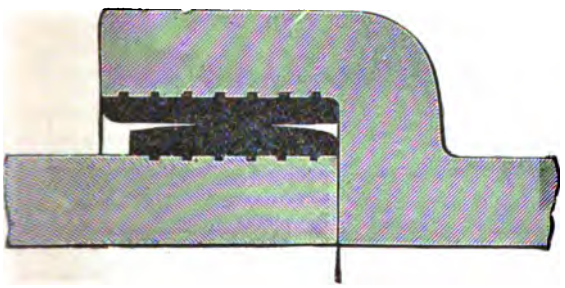
In laying pipes so provided it is well to grease both the spigot and socket-ring before putting them together, and, on inserting one within the other, to give the spigot of the one to be laid a half-turn or so in the socket of the one last laid in order to secure a good bearing surface all round the joint, thus forming a good connection.

In the accompanying sketch is illustrated a patent joint, brought out and now manufactured by Messrs. Doulton & Co., of Lambeth. Pipes are made with these joints in lengths of three feet, which is a great advantage, and before leaving the works each one is tested under pressure. The joint admits of a considerable deflection without impairing its efficacy, and is therefore not injured by settlement, while

other joints, from extreme rigidity, often become defective through fracture.

A point of high consequence in connection with a house-drain is the manner in which it is disconnected





or isolated from the public sewer. The disconnection is generally effected by fixing on the drain, at a point before it leaves the premises, a so-called intercepting trap. There are in existence at the present time a large number of these traps, of different shapes and sizes, each one having its own particular advantage, or otherwise.

Many persons prefer a trap which is constructed in a manner to allow the entering sewage to fall vertically on to the water-seal in it for a distance of some two or three inches, in order that the trap might be effectually cleared on a discharge being sent through it; others, again, give preference to a trap which has not a vertical drop, in the hope that the sewage would pass through it without in any way being broken up.

Fig. 2 illustrates Buchan's disconnecting trap, a form which is largely used.

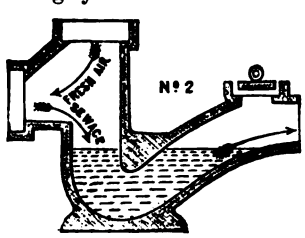


Fig. 3 shows a section of Field's trap, an appliance which is found to work well. Provision is also made for inspection at any time, or for passing rods down the drain on the sewer side of the trap, in the form of an arm constructed on the outgo side of it.

Another very good form of trap is illustrated in Fig. 4—Broad's interceptor. It, like Buchan's, has a vertical drop. An arm is also provided on the outgo side of the trap for inspecting or clearing the drain between it and the sewer.

In addition to the existence of an interceptor, it is neccssary to provide a means for inspecting and test-

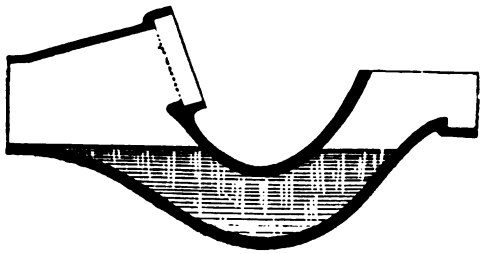


Fig. 3.

ing the house-drain when required, so that it could be ascertained whether or not sewage matter leaves the premises in a proper manner. This means is

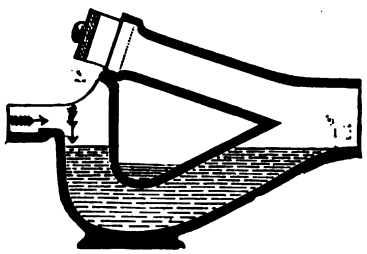
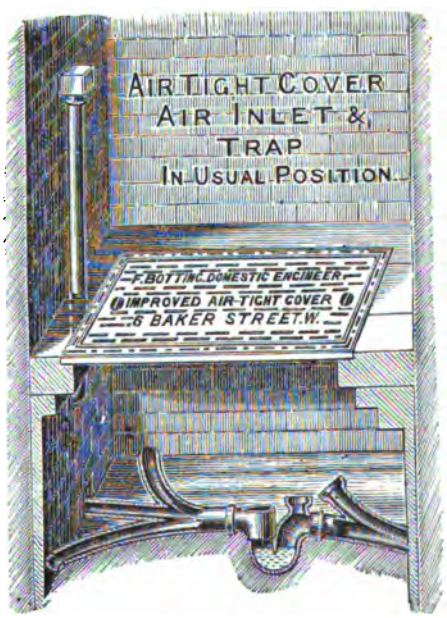


Fig. 4.

generally furnished by the construction of a manhole, or disconnecting chamber, formed over the trap, on the house side of which the drain is laid for a length of pipe or more in the form of a half-pipe channel.

The manhole should be made in a perfectly water-tight manner, with smooth walls, formed either by rendering the brickwork neatly in cement, or by using



white glazed bricks set and pointed in cement. The latter form is somewhat expensive, but it presents a very cleanly appearance. At the ground level the

chamber should be covered with an absolutely air-tight galvanised iron cover of convenient size, set in a stone slab, providing suitable means for inlet ventilation. In cases where the manhole is away from the dwelling, an open iron grating may be used in place of the air-tight cover.

The bottom of the manhole should be well banked up, and make to slope from the side walls to the channel with cement concrete, floated over with cement, and brought to a fine smooth surface.

It is advisable to make use of a taper channel in the disconnecting chamber, as, for example, in the case of a 6-inch drain, a channel tapering to four

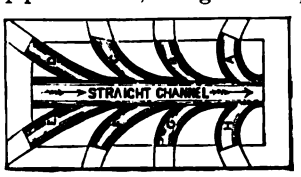
TAPER CHANNEL.

inches, fixing in connection with it a trap of the same size. By this means the flow before arriving at the trap is made somewhat concentrated and keeps this appliance clean.

In addition to the existence of the disconnecting chamber, it is a very desirable, and now usual, practice to construct other manholes over various parts of the drain for the purpose of rendering periodical inspection easy. Such manholes should be constructed at points where branch drains are caused to join the main, or at changes of direction in the drain; and, in the case of a long straight run of drain, at distances sufficiently near together to permit rods being passed from the bottom of one chamber to the other.

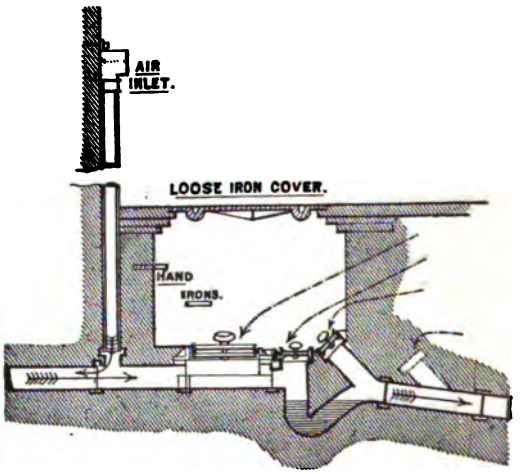
With regard to ordinary inspection manholes, the drain passing through these should take the form of an open half-pipe channel, as shown in the following sectional sketch. In cases where branch drains are made to join the main at manholes, curved half-pipe branch channels should be used, and fixed in positions immediately above the one in the bottom of the chamber. With such a system of manholes it is made possible, should any obstruction become formed in any part of the drain or branches, to remove the same by the aid of rods or other suitable means without the expenditure of much trouble and time.

The following sketch in plan serves to illustrate the method of fixing open channels for branch drains at manholes. It is found that, in the use of simple curved half-pipe channels, sewage matter, in turning

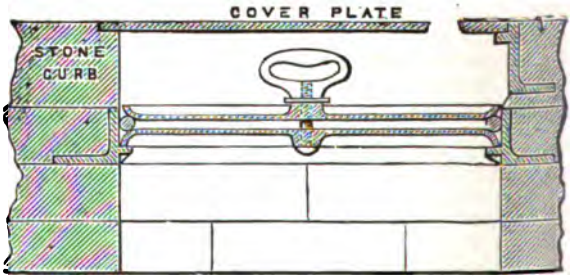


the curve, has a tendency to splash over the sides, and become deposited on the manhole bottom. In order to obviate this, channels have been designed in which the outer side is carried higher than the inner and curved one, so that sewage, as it rises in passing the bend, is thrown against the higher side and turned back again into the bottom of the channel. These channels are very serviceable, and can be fixed with ease, since they are provided with a broad flat base.

It is a good plan, and especially so in the case of manholes within the dwelling, to place in position immediately over or close to the open channels an absolutely air-tight cover, and a second cover at the level of the ground. In the event of a stoppage taking place in the drain, and sewage matter heading up in consequence, the ordinary manhole for the

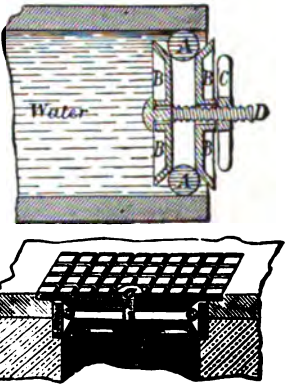


time being becomes practically a cesspool, whereas with a second cover such is not the case. The following sketches show a cover make by Mr. Botting, and it is a very suitable one indeed.



On somewhat the same principle is constructed the drain-plug by Mr. Botting, which is invaluable for testing purposes, &c.

A section of this plug is shown in the following sketch.



This appliance is also very useful to fix in sweeping eyes of traps; that is to say, in the mouth of the arm on the sewer side of the trap, with which many are provided.

The usual custom is to make use of a stoneware cap and bed it down on mortar or red-lead.

In many cases this work is overlooked or executed

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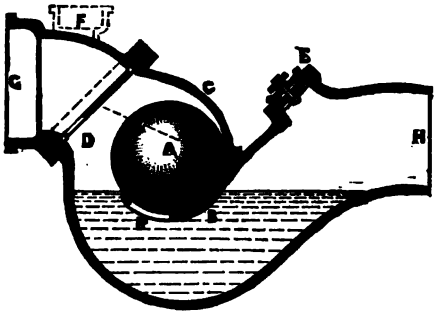
in a very imperfect manner. As a consequence, therefore, the great advantage to be gained through the existence of the trap is in a measure, if not wholly, lost. The insertion of a plug of the nature just referred to forms a very reliable and sound joint.

A recent invention, manufactured by Mr. Botting, is a trap of the form indicated by the sketch following. It is a combined tidal valve and disconnecting trap, and is intended to be used in cases in which the level of the water on the outgo side of the trap H



becomes temporarily higher than that on the intake side G.

This trap has been fixed in connection with drains in one or two instances, and in each case is found to work in a very satisfactory manner.

The action of the apparatus will undoubtedly be readily seen by referring to the diagram. The ball A, on the water rising in the trap, is made to float until it becomes jammed against the ring D, in consequence of the pressure exerted by the water or backflow.

The ball, on the water receding, falls gradually until it is again deposited in its seat, B. In the bottom of the seat is make an outlet, B, in order to provide a larger water-way.

C is a loose cap for inspection and removing the ball. Part of the cup B, by dipping into the water, forms the trap against the return of sewer or other emanations. E and F are inspection-eyes fitted with patent screw plugs.

A BEGINNING.—The Gas Committee of the Leeds Corporation have decided to advance the price of gas 4d. per 1,000 feet, in order to make up the additional £10,000 a year which will be incurred in consequence of the advanced wages granted to the stokers and others, and the reduction of hours from twelve to eight a day.

METROPOLITAN ASYLUMS BOARD.—At the recommendation of the Committee for General Purposes, the Metropolitan Asylums Board adopted the following resolutions:—(*a*) That the Managers do allow their carriages to be made use of for the conveyance of persons suffering from "dangerous infectious disorders" to places other than the Board's hospitals, pursuant to the power conferred upon them by section 6 of the Poor Law Act, 1889; (*b*) that the charge to be made for each conveyance be, for the present, 5*s*.; (*c*) that discretionary power be conferred upon the Ambulance Committee to remit the charge for such conveyance when they deem it is expedient in the interest of the public health; (*d*) that the Ambulance Committee be authorized to convey persons under exceptional circumstances to or from places outside the metropolitan area, and to make an extra charge for the same; (*e*) that it be referred to the Ambulance Committee to frame such regulations as may be necessary to give effect to the several decisions arrived at by the Managers.

THE

SANITARY RECORD.

The Organ of the Association of Public Sanitary Inspectors of Great Britain, and of the National Association of Sanitary Inspectors.

DECEMBER 16, 1889.

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The Editor will be glad to receive, for publication, announcements of meetings, reports of proceedings, and abstracts or originals of papers read at meetings of Medical Societies of Health, Public Analysts, and Sanitary Inspectors' Associations, &c.

Medical Officers of Health, Public Analysts, Town Clerks, Local Board Clerks, Sanitary Surveyors, and Inspectors, are requested to send Notices of Appointments and Vacancies to the Editor, care of Messrs. W. H. ALLEN & CO., 13 *Waterloo Place, S.W.*

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THE SANITARY LEGISLATION OF 1889.

LEGISLATION for sanitary purposes, and with a view to increasing the powers and responsibilities of local authorities, has not been neglected during the last session of Parliament. In the first place comes the Local Government Act for Scotland, which establishes in that country a system of county government similar to, though in some respects differing from, that provided last year for England and Wales.

Of purely sanitary measures five more now appear on the Statute Book. The Public Health Act, 1889, 52 and 53 Vic. c. 64, enlarges the powers of the Local Government Board to make regulations with a view to preventing the spread of cholera, and enables it to require custom-house officers to put them in force, and thus provides an additional means of dealing with the disease whenever it is likely to be imported into this Country. In the Metropolis, the powers of the Metropolitan Asylums Board for dealing with infectious diseases are enlarged by the Poor Law Amendment Act, 52 & 53 Vic. c. 56; and persons who are not paupers may now be admitted into their asylums. The powers of local sanitary authorities are at the same time enlarged by the Infectious Diseases Notification Act, 52 and 53 Vic. c. 72, under which the fact of a person being attacked by an infectious disease is to be notified to the medical officer of health of the district in which the patient happens to be. The local Acts in force in many large towns already contain clauses providing for such notification, and the general Act which has

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now become law only extends to the United Kingdom provisions which the experience of many districts has shown to be useful. The new Act, as many other Acts have also been at first, is permissive in its character; for, except in London, where it is in force from the beginning of this month, it is only to apply to those districts in which it is adopted by the local sanitary authority. It is too soon to tell yet whether these authorities will choose generally to adopt it or not; but, if they are guided by the teachings of medical science and experience, they should welcome the addition to their means of usefulness which Parliament has put within their reach. The third Act, strictly sanitary in its aims, applies only to one section of the community, but is nevertheless very important. For some time past complaints have been heard that the health of operatives employed in textile factories has been injured by inhaling fibrous particles of the material on which they worked, or by the excessive moisture of the atmosphere of the rooms in which the manufacture was carried on. The Cotton Cloth Factories Act, 52 and 53 Vic. c. 62, is intended to check both these ills. Wet and dry bulb thermometers are to be placed in all factories to which the Act applies, and their readings are to be registered twice a day by the person in charge of the factory. The inspector of factories is periodically to examine as to the general state of the temperature, humidity, and ventilation of these factories, and, if they are unsatisfactory, to require them to be remedied. He also is, when necessary, to require mechanical or other means to be provided to prevent the inhalation of dust by the workpeople. If the factory inspectors are able properly to discharge their new duties, the Act should produce a good deal of improvement in the condition of cotton factories. It seems, however, to be a pity that a concurrent power of inspecting and suggesting remedies is not given to the medical officers of health. The factory inspectors are not, most of them, specially qualified for judging of sanitary defects, and moreover have already plenty of work to occupy their attention. The association of the medical officer with them, would probably lead to increased efficiency in the working of the Act. Perhaps, in a few years, this change may be made by further legislation, and the Act may be extended to all textile factories.

The Prevention of Cruelty to, and Protection of, Children Act, 52 and 53 Vic. c. 44, is, as its title denotes, intended to confer on children greater protection than they have hitherto enjoyed. Wilful neglect or ill-treatment of a child, in such a manner as to cause unnecessary suffering or injury to its health, is made a misdemeanour punishable with a substantial fine, and, in proper cases, with imprisonment as well. And, where it is proved that the person convicted had a pecuniary interest in the child's death, the fine may be considerably increased. Cases of neglect and cruelty to children are not rare; but, hitherto, even when it has been morally certain that a child has been murdered by systematic neglect for the sake of some small insurance, payable in the event of its death, it has been practically impossible to obtain a conviction, and such offences have been consequently committed almost with impunity. The above provision is intended to meet such cases, and to provide some punishment for the guilty persons. The Act further cares for the physical and moral welfare of children, by prohibiting their employment as instruments of begging, and limiting the hours during which they may be employed at all in the streets or on licensed premises, leaving to local authorities the power to make bye-laws varying these hours according to the needs of their respective localities. In cases where persons are charged or convicted of offences under the Act, the child may be transferred to the control of a relative or other fit person, to the exclusion of its neglectful parent. The Poor Law Act, already referred to, also gives to guardians the power to assume and keep the control of children in cases where their parents have deserted them. The old ideas of parental rights have, therefore, been considerably shaken by this year's legislation, and the good of the child established as the all important point.

Besides the above Acts, matters nearly akin to sanitary ones have also been dealt with by Parliament. The Adulteration Acts have been extended, so as to deal with the fraudulent sale of horse-flesh as meat, by 52 and 53 Vic. c. 11. This Act, however, in no way extends the powers previously existing for dealing with those who sell unwholesome meat. It should rather be classed with the Margarine Act of 1887, as an Act which regulates the sale of a wholesome and comparatively cheap article of food, and imposes strict rules to prevent its being sold except under its own name. The Weights and Measures Act, 52 and 53 Vic. c. 21, should be placed in the same category. It is intended to amend the law under which standard weights and measures are provided, and penalties may be imposed on tradesmen who cheat their customers. It having been found that sellers of coal, especially by retail, frequently give short weight or measure, the law applicable to sales of coal is laid down strictly, and penalties intended to suppress dishonest dealing are provided. The Act, on the other hand, relieves bakers from what experience has shown to be the somewhat onerous requirements of the previously existing law as to weighing the bread they sell, and now excuses them from weighing their bread unless requested to do so by their customer.

In addition to these, which may be considered as Acts strictly dealing with matters of local government, are two others with which local authorities will be concerned, and which will probably have a good deal of bearing on the future welfare of the community, they are the Lunacy Acts Amendment Act, c. 41, and the Technical Instruction Act, c. 76. The former, as its title shows, is an amending Act only, and leaves the lunacy law, as it was before, a labyrinth through which only those who have devoted special attention to the subject can hope to find their way. Several important alterations have, however, been made, notably that whereby for the future private patients are no longer to be confined as insane on the certificate of two doctors, but an order of a judge or magistrate is always to be required. Persons alleged to be lunatics are thus to be protected against the risk of incarceration without due inquiry. Medical men and others who have to give certificates and take other proceedings for the purpose of getting insane persons properly secured are on the other hand to be protected from the risk of legal proceedings being instituted against them; a risk which recent experience has shown to be very real, and often very oppressive. To appreciate all the alterations made by this Act would require an exhaustive analysis of the previously existing law, and of its various provisions. It will not come into operation till May 1, 1890, and by that date no doubt some text-book explaining its provisions

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will be in the hands of those interested in its working. The other Act remaining for our notice, the Technical Instruction Act, should be of much interest to ratepayers. It was passed in obedience to the demand of certain educational enthusiasts, who complained that the education given in the board schools did not go far enough. Fortunately for the public, the bodies to spend money under the new Act are to be county councils or urban sanitary authorities and not school boards. They may, at the expense of the rates, give "instruction in the principles of science and art applicable to industries, and in the application of special branches of science and art to specific industries or employments." This instruction may include modern languages and commercial and agricultural subjects, or any other subject which the Department of Science and Art may sanction. The opportunities for spending the ratepayers' money will thus be seen to be large. Experience must show whether the local authorities will use these powers judiciously, or will be as lavish as many school boards have been. Technical instruction will of course be valuable to the recipients. But many a poor ratepayer may well be inclined to doubt whether he, as a member of the community, gets value for money expended on giving it to other people's children. The powers entrusted by this Act to local authorities are large and far reaching in their effects; and much good or harm may result, according as they are or are not judiciously administered.

THE NOTIFICATION ACTS AND THE RESPONSIBILITY OF MEDICAL MEN.

THE carrying out of the compulsory clauses of the Notification of Infectious Diseases Acts will have for effect to throw very responsible and oftentimes difficult duties upon medical men generally. Even experienced practitioners are apt to find themselves unable to decide, on a first visit, as to the nature of the disease, and many are naturally anxious to know what their conduct should be under these circumstances. It is obvious that when there is a reasonable doubt, the patient is entitled to the benefit, and the law will have been complied with if the medical attendant show due diligence in making up his mind as to whether or not the malady is one of those comprised within the Act. It is impossible to say beforehand to what extent this uncertainty may lead to friction. We cannot conceive that sanitary authorities would be disposed needlessly to harass medical men in the discharge of their functions so long as there was no evidence of an intention to evade compliance with the law. Should this view prove to have been too sanguine, it may ultimately be necessary to provide a "Committee of Experts," which would decide in cases of doubt, and so relieve the medical man of an onerous and ungrateful responsibility. A far more serious question, because attended with graver consequences, is that of the position of a medical man who has been misled into certifying to a disease, the existence of which was disproved by the subsequent history of the case. An action has just been brought at New York for very heavy damages (10,000 dols.) for an error of this description, resulting in a genuine attack of confluent small-pox. We must even now express our surprise and regret that no provision was made in the Act to guard medical men against vexatious proceedings in cases in which he has been misled. The reiterated experience of this very defect in the Lunacy Acts ought to have secured attention to the point, and we shall not be surprised if it should turn out to be a fruitful source of litigation. To avoid the Scylla of prosecution for non-notification. men will be very apt to fall into the maws of the Charybdis of a hasty diagnosis, the consequences of which may be disastrous. The new liability thus created ought to act as a "boom" to the Medical Defence Union, since cases of this kind would naturally fall within the scope of actions to be defended, and we know of no other means of ensuring against the worry and expense which would be entailed by possibly unavoidable mistakes. This point, too, possesses peculiar significance in view of the sweeping statements made, and virtually admitted, at the General Medical Council and elsewhere, in respect of the ignorance of men recently qualified of the symptoms, of these very diseases. It has been clearly demonstrated that no reasonable facilities are provided for acquiring the requisite knowledge on the part of the student, yet the result may be to embarrass him seriously on the very threshhold of his professional career. We are justified, however, in supposing that one result of the passing of the Act will be to free the hands of teaching and examining bodies, and to oblige them to remedy what has long been a crying *lapsus* in medical education.

THE STAFFORDSHIRE COUNTY COUNCIL AND SANITARY ADMINISTRATION.

A REPORT which was recently made by Dr. George Reid, in his capacity of Medical Officer of Health to the Staffordshire County Council, is, we have reason to believe, the first of its kind that has been made by a county health officer. It is not voluminous; such documents seldom need be. But yet it gives succinctly the salient points in the reports which have been forwarded to the county council by the medical officers of health for the several sanitary districts in Staffordshire, and it also shows the useful work that can be accomplished by, or at the instance of, a medical officer of health for a county.

Dr. Reid indicates very gently the sanitary deficiencies in his county so far as they have come to his knowledge during the few months he has acted as county health officer, such as the delay of the West Bromwich Rural Sanitary Authority to adopt regulations under the Dairies, Cowsheds, and Milkshops Order, the continuance of the system of foul, open, leaking privy cesspits, with their attendant dangers, in Tipton, Quarry Bank, Smethwick, Rowley Regis, and Handsworth, and also the continued use in Smethwick and within reach of the supply of the South Staffordshire Waterworks Company of dangerous well-water. Only in one instance, however, has Dr. Reid thought it urgently necessary to advise the county council to interfere in the sanitary administration of a constituent district, and that was in connection with an outbreak of typhus fever at Brierley Hill. In that instance six cases of typhus fever, with one death, were reported in the same district in which two cases had previously occurred. No provision existed for dealing with these cases, although the local medical officer of health had on several occasions brought the necessity for such provision before his sanitary authority. Considering the fact that typhus fever is a most deadly and infectious disease in a populous and unsanitary neighbourhood, but is also one which may be readily checked by iso-

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lation and fresh air, the county council, on the advice of Dr. Reid, secured a special consideration of the subject of hospital provision by the sanitary authority with a satisfactory result.

There is one Staffordshire locality to which Dr. Reid's attention and that of the county council may with advantage be directed, and that is Cradley, a parish under the jurisdiction of the Stourbridge Rural Sanitary Authority. Cradley has long enjoyed an unenviable notoriety for "grave sanitary shortcomings and for prevalences of filth diseases." During the past sixteen years it has four times been visited and reported on by inspectors of the Local Government Board, and the latest of these inspections, which was made by Dr. Gresswell in the early part of the present year, showed that in many respects little or nothing had been done to remove the gross sanitary defects formerly existing in the locality. "Half or so of the house sewage, as well as filth from a few water-closets and slaughter-houses, passes into the highway drains, which ultimately discharge directly or indirectly into the river." Scavenging is not efficient. "The large, deep, open, dilapidated middens remain as heretofore." The water supply from local wells is often dangerously polluted. Dwellings remain for the most part very dirty, badly ventilated, and quite commonly close and fusty. Slaughter-houses and dairies are neither properly constructed nor properly managed. Some of the schools are not well ventilated. If Dr. Reid and the county council can succeed in rousing the local authority in this case to a proper sense of their responsibilities, a good work will have been accomplished.

With Dr. Reid's report before us, we cannot but regret that so few of the county councils have availed themselves of the powers given them by the Local Government Act, 1888, to appoint a medical officer of health. There are many directions in which a county officer, free from the influence of local prejudices and jealousies, could perform useful work in the interest not only of individual localities, but of the public health generally. As Dr. Reid justly remarks, much improvement has resulted since sanitation first received in 1872 the attention which it deserved, but there is ample room for further improvement. "I believe," observes Dr. Reid, "that the county councils have it in their power to so further improve the health-rate of the country that on looking back in years to come it will be found, from equally convincing statistics, that a new era had started with their existence as it did with the first real dawn of sanitation eighteen years ago."

THE HOUSING OF THE POOR.

It is earnestly to be hoped that Mr. Ritchie's effort to rouse the local sanitary authorities throughout the country to a sense of their responsibilities in connection with the housing of the working-classes, may not be in vain. It is only too true, as stated by Mr. Ritchie in his recent circular letters, that a large number of the working population of this country are at present housed in tenements which are either unfit for human habitation, or are in such a condition as to be distinctly prejudicial to the health of the inmates. It is also but too true that the local sanitary authorities are to a great extent responsible for this condition of things, inasmuch as they possess ample statutory powers for dealing with this matter, but have in many cases utterly neglected to put them in force. These powers have been entrusted to the sanitary authority, in order that they may be exercised for the protection of the poor, who are unable themselves, for the most part, to enforce the observance of the laws relating to the public health by their landlords.

It is an old-standing complaint. The Royal Commission on the Housing of the Working Classes were obliged to report in 1885 that what was needed was "motive power" rather than fresh legislation. There had been a "failure in administration rather than in legislation, although the latter is no doubt capable of improvement." With a view of fixing the responsibility for this failure in administration it was expressly declared by Section 7 of the Housing of the Working Classes Act, 1885, that it shall be the duty of every local authority entrusted with the execution of laws relating to public health and local government to put in force from time to time, as occasion may arise, the powers with which they are invested, so as to secure the proper sanitary condition of all premises within the area under their control. But that section might as well not have encumbered the Statute Book for all the good it has effected. It has been nobody's duty, except that of public opinion, to see that it was respected, and hence it has remained to a great extent a dead letter until some circumstances have directed public attention once more to the scandal. The ample powers of the Nuisances Removal Acts and the Public Health Act for preventing premises that are unfit for human habitation from being inhabited, and for preventing overcrowding, have not been put in force to the extent that they should have been, nor have Torrens's Artisans' Dwellings Acts, nor Cross's Artisans' and Labourers' Dwellings Improvement Acts, nor Lord Shaftesbury's Labouring-Classes Lodging Houses Acts been resorted to sufficiently.

In London it is doubtless the peculiar constitution of the local vestries and district boards which forms the most impervious obstacle to improvement, but until such times as reform shall overtake those bodies, something may be effected by the united efforts of public opinion, the London County Council, the Mansion House Council on the Dwellings of the Poor, and the Departments of State, to keep before the eyes of negligent authorities and avaricious owners of dilapidated house property their respective duties to the community.

Some consolidation of the various Acts relating to this question is also needed, and will, we hope, be carried out by the Government before long. When the obligations and powers of local authorities are set out and simplified in one Act instead of being scattered through half-a-dozen, where they are surrounded by needless technicalities, a great improvement will have been effected. The London County Council have made some valuable suggestions with this object, and we hope to see them ere long embodied in an Act of Parliament.

THE SPREAD OF INFECTION.

A very unusual charge was recently heard before the magistrates of Rothbury, near Newcastle-on-Tyne.* Mr. Henry Edward Armstrong, Medical Officer of Health for Newcastle, was charged with various offences framed under section 126 of the Public Health Act, by conveying his wife in an omnibus and

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* See page 299.

by train whilst she was suffering from scarlatina. The section in question imposes a penalty on any person who, being in charge of a person suffering from any dangerous infectious disorder, wilfully exposes the person so suffering in any public conveyance without proper precautions against spreading the disorder. It was shown that on Sunday August 11 Mr. Armstrong's daughter was found to be suffering from scarlet fever, and was removed to the hospital for infectious diseases at Newcastle. All proper precautions to prevent infection were then taken. Mr. Armstrong accompanied her, and did not return home to Rothbury till the following afternoon. On the morning of Monday August 12 Mrs. Armstrong, feeling unwell, was seen by a neighbouring medical man, Dr. Jack, who found that she was suffering from diarrhœa and sore throat. She had, however, no rash and no exceptionally high temperature; and Dr. Jack, though he regarded the case as suspicious, could not make up his mind that it was scarlet fever. When Mr. Armstrong came home in the afternoon and found his wife unwell, he at once engaged an omnibus to take her to the railway station, and so conveyed her by it and by train to Newcastle; and on the Tuesday morning took her to the same hospital where her daughter was. She was there found to be suffering from scarlatina, and remained as a patient for 56 days. No notification that Mrs. Armstong was suffering from an infectious disorder was given to the owner of the omnibus or to the railway company, and the carriages had consequently not been disinfected; but it was not suggested that anyone had contracted the disease in consequence. The defence was that Mr. Armstrong did not know his wife to be suffering from scarlatina at the time when he took her away from Rothbury, and consequently could not be found guilty of the offence of wilfully exposing her while so suffering. The Bench adopted this view, and consequently dismissed the charge. The law requires strict proof in criminal cases, and the decision was therefore probably correct, as the evidence failed to show that the characteristic symtoms of scarlet fever or scarlatina had become apparant at the time of the removal. The prosecution was apparently a vindictive one, undertaken because Mr. Armstrong, while temporarily resident at Rothbury, had joined in a newspaper controvery as to its sanitary arrangements, and had written in a manner which the inhabitants regarded as injurious to their trade of letting lodgings. It had, however, in its favour the strong fact that two members of the defendant's family had successively been taken to the Newcastle hospital for infectious diseases, and there been found to be undoubtedly suffering from an infectious disorder, and that admittedly no precautions to prevent the spread of infection were taken when Mrs. Armstrong was removed. Considering the professional and official position held by the defendant, we cannot consider him as morally free from blame. He has escaped from a prosecution, which probably, if the alleged offender had been anyone but himself, he would have approved as a proper one. The result shows, as other cases before have shown, how difficult it is to prove in such cases that the exposure of a person suffering from an infectious disease is wilful, and how slight therefore is the protection against the spread of infection which the section gives. Medical men, by warning those in charge of a patient in the early stages, while the character of a probably infectious disease is yet doubtful, may do much to prevent other persons coming near the sufferer and so running the risk of infection. But if a medical officer of health, when he ought to suspect the possibility of an incipient disease proving to be infectious, takes the patient in public conveyances, he sets a most pernicious example to others who naturally would regard his conduct as a guide for their own actions. Persons in an official position should be above suspicion, and should not themselves be guilty of conduct which they have to condemn in the case of others.

THE TEACHING OF PHYSIOLOGY IN GIRLS' SCHOOLS.

THAT "a little knowledge is a dangerous thing," is now acknowledged to be a fallacy of the eighteenth century, and we hold instead the opinion that those who cannot by force of circumstances or from lack of inclination "drink deep of the Pierian spring," may at least taste its refreshing waters with impunity and take a draught from time to time.

The multiplicity of subjects placed now-a-days before the young student, even at our board schools, makes it impossible for him or her to do more than taste in many instances, and it is, we think, to be regretted that in education, manner rather than matter is not more considered, and how to think made the aim more than what to know.

The advantage of using science as a means of educational discipline is that both thinking and knowing are simultaneously taught. Observation, generalization, and ratiocination are taught at the same time, and simultaneously with an attractive series of facts.

Among the subjects of elementary science taught in our schools none is perhaps more useful or more educative than physiology. To learn how the mysterious body which obeys our bidding and is yet our relentless tyrant, works, cannot but be attractive, and if at the same time accuracy in the observation of minute details, the relation of facts to one another, and the frank acknowledgment of ignorance when nature refuses to give up her secrets, can also be inculcated, physiology might be made a means of the highest moral and intellectual training. The strange jumble of ideas and confusion of mind often shown by girls in board and other schools, and evidenced in their answers to examination questions in physiology, point not so much, in our opinion, to stupidity on the part of the girls, as to lack of the power of making meanings clear or explaining a fact with lucidity on the part of the teacher. Physiology, to be of help to girls, either as a means of intellectual training, or of making them more useful members of society as wives and mothers, should be well taught, and by good professional teachers. As we have now a number of highly-trained medical women who have taken degrees and are anxious for employment, professional women teachers to teach physiology thoroughly in girls' schools cannot be difficult to obtain. By thorough teaching we do not mean advanced teaching, but simply that the most elementary fact should be explained so clearly and its significance and bearing on the whole structure should be made so patent, that it cannot be misunderstood by the student. We cannot but think that the confused ideas of circulation and digestion which the examination papers of many girls show they possess, is a confusion

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derived from the teacher's mind. "Tell me some books to read about physiology," once said a lady more noted for her audacity than her learning, to the present writer, "as I am going to give some lectures to girls." This is unfortunately the kind of teacher in science whom it is too frequently thought sufficient to give girls. How can such a teacher, after a few weeks' reading, give a lucid explanation of nervous action, the part played by the liver in the economy or the structure of the eye? No, to teach elementary physiology to girls even in board schools, so that it can be of practical benefit as a mental discipline or as a fountain of knowledge, a person thoroughly trained in this and the allied sciences is necessary, and one who has passed through the curriculum of a medical education. But even all who possess this qualification are not suitable, for besides knowledge, which is the first desideratum of a teacher, the art of teaching and being able to clearly convey knowledge to the minds of others is the second. Pedagogy is not yet looked upon as a fine art in the English universities, though its importance is fully recognized in Germany. Women, who are by nature teachers, will probably be the first to see their shortcomings reflected in the confusion of mind of their pupils, and will ask to be taught how to teach, and until they do so, physiology and science will be taught in girls' schools in the present perfunctory manner.

THE DISINFECTING ACTION OF STEAM.—From researches made by Von Esmarch on the action of steam as a disinfectant it would appear that the effects in relation to the destruction of bacteria depend not so much upon the temperature as upon the degree of saturation of the steam. If there is air with it, the power of destroying organic germs is very much diminished. Experimenting in the same way on the spores of malignant pustule Von Esmarch found that while superheated steam, which was not in a condition of saturation at a temperature of 120° C., was unable to destroy the spores in half an hour, saturated steam at 100° C. destroyed them in from five to ten minutes.

SEWER VENTILATING SHAFTS.—The Medical Officer of Health of the City of London, in a recent report, stated that at the request of the managers of the Stock Exchange he had recently made a full report on the sanitary condition of that building, in consequence of the large number of cases of enteric fever which had been reported among members of the House, the origin of which had been attributed to defects within the building itself. Having gone thoroughly into the matter in consultation with the secretary and architect of the Stock Exchange, and having made a complete investigation of the place, he had arrived at the conclusion, and had so reported to the managers, that in his opinion the cause of such cases of infectious disease was not to be explained by any faults in the general sanitation of the building, and in the absence of such evidence there was a very strong presumption in his mind that these cases of fever might have taken their origin from the noxious exhalations rising from the sewer ventilating shafts. It must be remembered that a large number of persons, amounting to thousands, congregated every working day during business hours in the streets outside the entrances to the Stock Exchange, and stood in close proximity to, if not over, the gratings with which these openings were covered. As considerable alarm existed among the thousands of persons interested in the Stock Exchange, he thought that a serious attempt should be made to relieve their anxiety, and he therefore recommended that the matter should be referred to the Streets Committee to consider the best method to adopt in affording relief. This was agreed to.

NOTES OF THE MONTH.

ATAVISM AND CONVICT MARRIAGES.

THE idea of facilitating marriages between male and female long-sentence convicts could never have occurred to anyone at all mindful of the future of our race, and the announcement some months since that the French Government had made a plunge in this direction was well calculated to strike believers in atavism with dismay. The question has recently cropped up in Italy, where it promises to be dealt with in a more statesmanlike manner, if one may judge from sundry articles on the subject, all of which are distinctly adverse to such a practice. The idea is one of such far-reaching importance that sentiment ought to be banished entirely. We have to deal with beings who have proved themselves unsuitable denizens of civilized communities. Some among them doubtless owe their degradation to force of circumstances acting upon a weak moral constitution; but the majority are types of humanity which it is immensely profitable to stamp out in the interests of future civilization.

A HOME IN ESSEX.

"THE homes of Merry England; how beautiful they stand!" Everybody used to be quoting this once on a time, and perhaps they believed it. Occasionally, however, the veil is lifted from some of these homes, as it was the other day at an inquest in Rural Essex. The father of the deceased—a young woman—with his wife and family, occupied, and the sanitary authority permitted them to occupy, a wretched hovel of the following description:—"It is a very small, low, thatched building, containing two diminutive rooms, with a narrow space or lean-to at the back." The latter had been used as a sleeping-room, though the plaster was broken so that it actually opened into the garden. "The rooms are innocent of ceilings, a little plaster being merely daubed upon the inside of the thatch." Small wonder that there was an inquest to be held upon one of the occupants. The coroner declared the cottage to be altogether unfit for occupation by a family, and there is reason to hope that the sanitary authority will be compelled to take action, and have the cottage either closed or made decently habitable.

LEICESTER AND ITS PAUPER PATIENTS.

AT a recent meeting of the Leicester Guardians the vexed question of the admission of pauper patients to the Fever House at the Infirmary was reviewed. The Infirmary Board had lately stipulated that the Guardians should pay them for every pauper patient at the rate of £1 per week instead of by the usual "lump" subscription of £25 a year. The Guardians, considering the proposed charge excessive, have decided to discontinue the subscription, and to treat the pauper patients at the workhouse. It is stated that by this new departure at least two considerable advantages will be gained. The Infirmary Board will be relieved from their complaint that charitable funds are applied to the relief of pauper cases, the cost of which ought to fall on the rates. And the Guardians will be enabled to retain the treatment of all such cases under their own direct control and supervision. It is, nevertheless, to be feared that the new method will be found more expensive that the old one.

THE SANITARY INSPECTION OF SCHOOLS.

On the occasion of a lecture on "Health," given by Miss Barnett at Norwich, Dr. Beverley, in the course of an address, observed :—I have long been of opinion that all schools—public and private—should be placed under the supervision of a duly qualified medical officer of health, whose duty it should be not merely to close schools, as now, when an epidemic breaks out, but to be responsible for their entire and efficient sanitation. The law has rendered education compulsory. It should, therefore, secure to the young generation of all classes thoroughly healthful schools, and the system of school inspection on behalf of the Government ought to embrace a sanitary expert in addition to the present admirable educational supervision which has brought this Department to its present state of efficiency.

THE FOUL SMELLS IN OUR PUBLIC BUILDINGS.

It is not by any means creditable to the vaunted perfection of English sanitation that the President of the Local Government Board should, at a recent dinner given by the Plumbers' Company in the Fishmongers' Hall, rise and make a statement to the effect that he had once received a deputation from the Plumbers' Company at the Local Government Board offices; if he had received them at the House of Commons, he was sure that in five minutes there would not have been a plumber left by reason of the foul smells with which the atmosphere of certain parts of the House was redolent. Members of the House have long complained of the foul and noisome smells which pervade the House, and it is, in face of the above authoritative statement, high time some steps were taken to remove so grave a public scandal. No time should be lost in appointing a commission of competent sanitary experts to prepare a report on the general sanitation and ventilation of the Houses of Parliament.

Such an inquiry might well be extended so as to include the Law Courts and other public buildings. The draught and stuffiness of the Courts are constantly the subjects of complaint by the Bench and the Bar, and only a few weeks since the Lunacy business was arrested in consequence of the illness of Lord Justice Cotton, said to be due to the foul air of the Court. Lord Justice Fry and Lord Justice Bowen have both referred in strong terms to the prevalence and extent of the evil and its effect on the health of the members of the Court. Such complaints are not creditable to our English experts in ventilation.

COMPULSORY NOTIFICATION OF INFECTIOUS DISEASE.

The discussion which took place at the last meeting of the St. Marychurch Local Board, on a proposal that the Infectious Disease (Notification) Act, 1889, should be adopted for the district, illustrates a very common fallacy in connection with this subject. It was contended by the opponents of the measure that "the people of the district would be very loath to report cases of infectious disease because it would drive away customers." This fallacy was easily dispersed by the medical officer of health, Mr. Karkeek, who pointed out that notification did not necessarily mean exposure. In Torquay, of which place Dr. Karkeek is also medical officer of health, the notification is regarded by him as confidential information, and during the two and a half years in which the system has been in force in Torquay not one case has been made public. The importance of notification is very great. There might be a butcher with smallpox or scarlet fever in his house, distributing the disease among his customers, and if 25 or 30 cases occurred in the place (an outbreak which could not in any circumstances be kept secret) the result might be the closing of all the lodging-houses for a year, and much pecuniary loss to the community—a loss which might have been avoided if the proper precautions had been adopted at the outset. During the last twelve months Mr. Karkeek had detected two separate cases in which children living in houses where there was infectious disease were employed in dairies. If these cases had been concealed there might have been 10 or 20 deaths as the result of the germs of the disease being carried to the dairies, and the dairymen would have lost their businesses. Fortunately the opposition to compulsory notification was overcome, and the beneficent provisions of the Act of last session were adopted. The Local Board would do well to reconsider their decision not to provide some hospital accommodation for their district. A district, and especially a health resort, cannot be regarded as having its sanitary defences complete if it lacks the means of promptly isolating and treating cases of infectious disease. In the end, a hospital saves more than it costs.

THE SUPERVISION OF MILK SUPPLY.

When Dr. G. Sims Woodhead lectures on the subject of "Milk and Milk Supply," he speaks as "one having authority," and his remarks are worthy of careful consideration. There should be, he contends, a more complete system of control of milk supply in this country. Every case of illness on a farm, however slight, should be reported to the proper authority. District inspectors of farms should be appointed, who are experts in veterinary practice, and experts in hygiene and sanitation. All cases of disease, whether in the dairy stock or staff, should be reported at once, and under heavy penalties. A careful inspection of farms should be frequently made—premises, drainage, ventilation, and cattle—and the whole of the apparatus should be tested as regards cleanliness by means of fermentation experiments.

PAUPER LUNATICS.

The statistics as to the number of pauper lunatics in the county of London are startling enough. From a recent return as to asylums for pauper lunatics, it is seen that there are 10,322 of this class in London. The increase in the number of pauper lunatics in the year 1888, in the area which is now the county of London, is estimated at 450. Perhaps it will be as well to mention the asylums which are now included in the county of London. North of the Thames or in Middlesex there are, Hanwell, Colney Hatch, Banstead, and Lancaster, whilst there are other county asylums with accommodation for 223 patients in all, licensed houses taking 712, and workhouses or infirmaries with 403. South of the Thames or in Surrey there are Wandsworth, Cane Hill, and Brookwood Asylums, as well as other smaller asylums, having 167 patients in all, and workhouses taking 42. Barming Heath is the only large asylum in Kent, which is now under the control of the London County

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Council. The number of wandering lunatics in the county of London amounts to 476. At present the existing asylums in Middlesex and Surrey can only accommodate 8,345 patients, but the accommodation is about to be increased by the building now being erected at Claybury, which will afford room for 2,000 patients, and the extension of the Cane Hill Asylum by which 876 will be added to their present number. It is estimated that the London County Council may have to make provision for 11,272 pauper lunatics! Meanwhile our pauper lunatics have to be sent to various county and borough asylums, some 80 being taken as far as Exeter, whilst 115 are housed at Portsmouth, 70 at Nottingham, 35 at Newcastle, 80 at Leicester, and many others in various towns. This naturally entails a heavier expenditure to Londoners, so that it will be a good work accomplished when we can house all our own pauper lunatics.

INSANITARY BOARD SCHOOLS.

FAULTY arrangements and bad workmanship are said to be the distinguishing features of some of our Board Schools. The *British Medical Journal*, dealing with the subject, says:—"The need for the independent inspection of public buildings, especially with regard to drainage, either by the authority of the Government or that of a central sanitary board, is well exemplified by the recent discoveries of the disgraceful condition of some of our Board schools. At some of the schools in London it is reported that there have been numerous cases of infectious sore throat, and it cannot be doubted that drainage defects such as those which have been discovered at some of the comparatively newly-erected schools are fruitful causes of this and other kinds of illness. It is questionable whether the policy of "accepting the most favourable price" is always to be commended on public grounds. But if such a policy is pursued, it necessitates the employment of very superior and entirely independent officers to test the work of the contractors. Faulty arrangements and bad workmanship in the construction of our public buildings are, in the end, most costly to those who pay rates and taxes, for they lead to a great deal of preventible illness, and eventually necessitate the expenditure of very heavy sums of public money for the remedy of evils which, in the existing state of our knowledge, it is quite possible to entirely prevent."

THE PUBLIC HEALTH

DURING NOVEMBER 1889.

THE mean temperature during the month of November at the Royal Observatory, Greenwich, was 44°·8, and exceeded by 2°·0 the average November temperature in one hundred years. An excess of temperature prevailed on nineteen days during the month, while on the remaining eleven days it was below the average. The mildest day of the month was the 15th, when the mean was as high as 51°·9, and showed an excess of 10°·1; the coldest day was the 27th, when the mean was only 32°·1, and 8°·7 below the average. Rain was measured on nine days during the month under notice, to the aggregate amount of 0·8 of an inch, which was little more than one-third of the average amount in the same month of sixty-one years, and was below that recorded in the corresponding period of any year since 1871. During the first eleven months of the current year the rainfall has amounted to 21·7 inches, which was 1·6 inches below the average amount in the corresponding periods of sixty-one years. The sun was above the horizon during 264·4 hours during November, and 31·6 hours of bright sunshine were recorded at Greenwich, which was below the average amount registered in the corresponding months of the ten preceding years. The wind was westerly during the first ten days of the month, after which easterly winds prevailed until the 21st, when the wind was again westerly.

In the twenty-eight large English towns dealt with by the Registrar-General in his Weekly Returns, which have an estimated population of upwards of nine and a half millions of persons, 22,256 births and 13,473 deaths were registered during the four weeks ending Saturday, November 30. The annual birth-rate, which had been 29·6 and 31·1 per 1,000 in the two preceding months, declined again to 30·4 during the month under notice, and was considerably below the average rate in the corresponding periods of the seven preceding years, 1882–88. The lowest birth-rates last month in these towns were 24·5 in Nottingham, 25·6 in Oldham, and 25·7 in Brighton; in the other towns the rates ranged upwards to 34·9 in Leicester, 35·3 in Portsmouth, 37·0 in Newcastle-upon-Tyne, and 39·6 in Cardiff. In London the birth-rate last month was equal to 30·0 per 1,000, while it averaged 30·7 in the twenty-seven provincial towns.

The annual death-rate in the twenty-eight towns, which had been 17·0 and 17·8 per 1,000 in the two preceding months, further rose to 18·4 during the month under notice, but was below the rate in the corresponding period of any year on record. The lowest rate of mortality in these towns was 14·0 in Birkenhead. The rates in the other towns, ranged in order from the lowest, were as follow:—Brighton, 14·5; Norwich, 14·5; Nottingham, 15·4; Derby, 15·4; Cardiff, 15·6; Bristol, 15·9; Portsmouth, 16·6; Leicester, 16·7; London, 16·9; Birmingham, 17·8; Salford, 17·9; Oldham, 17·9; Huddersfield, 17·9; Hull, 19·3; Wolverhampton, 19·4; Sheffield, 19·6; Liverpool, 20·3; Blackburn, 20·4; Leeds, 20·8; Halifax, 21·2; Bolton, 22·6; Bradford, 23·2; Preston, 23·8; Newcastle-upon-Tyne, 24·6; Manchester, 25·5; Sunderland, 27·0; and the highest rate during the month, 28·0 in Plymouth. The mean death-rate in the twenty-seven provincial towns was 19·7 per 1,000, while in London, as before stated, it did not exceed 16·9 per 1,000. The 13,473 deaths from all causes in the twenty-eight towns during the four weeks of November included 288 from scarlet fever, 271 from measles, 255 from whooping-cough, 200 from "fever" (principally enteric), 191 from diphtheria, 156 from diarrhœa, and 2 from small-pox; in all, 1,363 deaths resulted from these principal zymotic diseases, equal to an annual rate of 1·9 per 1,000, which was below that in the corresponding period of any year on record. The death-rate in London last month from the principal zymotic diseases was equal to 1·7 per 1,000, while in the twenty-seven provincial towns it averaged 2·0, and ranged from 0·3 in Huddersfield, and 0·6 in Brighton, in Leicester, and in Halifax, to 2·9 in Salford, 3·1 in Bolton, 6·0 in Sunderland, and 7·2 in Plymouth.

Scarlet fever was the most fatal zymotic disease in the twenty-eight towns during the month under notice. The rate of mortality from this disease, which had increased from 0·28 to 0·41 per 1,000 in the three preceding months, declined again to 0·39 during November, and was considerably below the average rate in the corresponding periods of the seven preceding years, 1882–88. In London the death-rate from scarlet fever was only 0·25 per 1,000, while it averaged 0·51 in the twenty-seven provincial towns, among which this disease showed the highest proportional fatality in Sheffield, Bolton, and Plymouth. The death-rate from measles, which had been 0·17 and 0·26 per 1,000 in the two preceding months, further rose to 0·37 during the month under notice, but was below the rate recorded in the corresponding period of any of the seven preceding years, 1882–88. In London the measles death-rate was 0·31 per 1,000, while it averaged 0·42 in the twenty-seven provincial towns, and was highest in Preston, Nottingham, and Sunderland. The rate of mortality from whooping-

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cough, which had steadily declined from 0·69 to 0·28 per 1,000 in the seven preceding months, rose again to 0·35 during November, and differed but slightly from the average in the corresponding periods of the seven preceding years. In London the death-rate from whooping-cough was 0·41 per 1,000, while it averaged 0·30 in the twenty-seven provincial towns, among which this disease was proportionally most prevalent in Hull, Portsmouth, and Wolverhampton. The death-rate from "fever" (principally enteric), which had been 0·30 per 1,000 in each of the two preceding months, declined to 0·27 during the month under notice, and was below the average rate in the corresponding periods of the seven previous years, 1882–88. In London the "fever" death-rate was only 0·22 per 1,000, while in the twenty-seven provincial towns it averaged 0·32, and was highest in Preston and Cardiff. The rate of mortality from diphtheria, which had been 0·30 per 1,000 in each of the two preceding months, declined to 0·26 during November, but, with one exception, was higher than that recorded in the corresponding period of any of the seven preceding years. In London the diphtheria death-rate was as high as 0·37 per 1,000, while it averaged only 0·17 in the twenty-seven provincial towns, among which this disease showed the largest proportional fatality in Salford and Plymouth. The death-rate from diarrhœa showed a further marked decline from that recorded in recent months, and was considerably below the average. Two fatal cases of small-pox were recorded in the twenty-eight towns during the month under notice; of these, one occurred in London and one in Liverpool. Only one small-pox patient was under treatment in the Metropolitan Asylum Hospitals at the end of October. These hospitals contained, however, 1,569 scarlet fever patients on the same date, against numbers steadily increasing from 547 to 1,437 at the end of the five preceding months; the weekly admissions averaged 123 during the month, against 131, 146, and 157 in the three previous months.

The rate of infant mortality in the twenty-eight towns, measured by the proportion of deaths under one year of age to registered births, was equal to 150 per 1,000, and was slightly below the average in the corresponding periods of the seven preceding years. In London the rate of infant mortality was 132 per 1,000, while it averaged 165 in the twenty-seven provincial towns, and ranged from 92 in Portsmouth, 113 in Brighton, and 117 in Norwich, to 206 in Leicester and in Wolverhampton, 221 in Oldham and in Bradford, and 253 in Preston.

The death-rate from diseases of the respiratory organs, judged by the Metropolitan returns, was considerably below the average during November. The weekly number of deaths referred to these diseases in London averaged 328, and the annual death-rate was equal to 3·9 per 1,000.

The causes of 263 of the 13,473 deaths in the twenty-eight towns during the four weeks of November were not certified, either by registered medical practitioners or by coroners. These uncertified deaths were equal to 2·0 per cent. of the total deaths, a lower proportion than in any month since May last. In London the proportion of uncertified deaths was only 1·0 per cent., while it averaged 2·6 in the twenty-seven provincial towns. The causes of all the deaths during the month were duly certified in Norwich, Plymouth, Derby, Birkenhead, and Cardiff; among the other towns, the largest proportions of uncertified deaths were recorded in Sheffield, Hull, Liverpool, and Huddersfield.

Among the population living in the outer ring of suburban districts around London, estimated at upwards of one and a quarter million of persons, the annual death-rate from all causes during November did not exceed 14·9 per 1,000, which was below that recorded in the corresponding period of any of the seven preceding years, 1882–88. During the four weeks ending November 30, 36 fatal cases of diphtheria, 25 of whooping-cough, 24 of scarlet fever, 21 of measles, 18 of "fever" (principally enteric), 15 of diarrhœa, and not one of small-pox, were recorded in the outer ring; in all, 139 deaths resulted from these principal zymotic diseases, equal to an annual rate of 1·4 per 1,000, which was considerably below the average in the corresponding periods of the seven preceding years. Compared with the previous month, the fatality of measles, diphtheria, and whooping-cough showed an increase. Of the 36 deaths from diphtheria, 6 occurred in West Ham, 6 in Tottenham, and 3 in Croydon registration sub-districts. The 24 fatal cases of scarlet fever included 8 in West Ham, and 5 in Croydon sub-districts; 11 deaths were referred to measles in Walthamstow sub-district, and 10 to whooping-cough in Croydon sub-district.

NOTIFICATION OF INFECTIOUS DISEASES
IN 46 URBAN SANITARY DISTRICTS.

The table on page 282 contains uniform statistics relating to sickness and mortality in forty-six of the fifty-eight urban sanitary districts of England and Scotland in which the notification of infectious diseases is compulsory. The population of the towns for which we are enabled to publish complete statistics for the month of November is estimated at upwards of four millions of persons. The annual rate of mortality from all causes in these towns during the month under notice averaged 18·7 per 1,000, against 17·4 and 18·0 in the two preceding months. This death-rate slightly exceeded the mean rate last month in twenty-eight of the largest English towns, which was 18·4 per 1,000. The rates of mortality during the month under notice were considerably below the average in Reading, Willesden, Barrow-in-Furness, Accrington, Cheltenham, Birkenhead, and Norwich; while they showed an excess in Bradford, Ripon, Preston, Manchester, Rotherham, and Llanelly. The death-rate from the eight infectious diseases dealt with in the table averaged 0·88 per 1,000, against 0·97 and 0·90 in the two preceding months. No deaths from any of these infectious diseases were registered during last month in Cheltenham, Jarrow, Leek, Macclesfield, Ripon, or Weymouth; whereas they caused the highest death-rates in Burton-on-Trent, Ashton-under-Lyne, Bolton, Reading, Wakefield, and Rotherham. Scarlet fever showed the highest proportional fatality in Burnley, Bolton, Wakefield, and Rotherham; diphtheria in Edinburgh, and Salford; enteric fever in Preston; measles in Nottingham, Edinburgh, Burton-on-Trent, Dewsbury, and Llanelly; and whooping-cough in Burton-on-Trent, Greenock, Portsmouth, and Wakefield. Three deaths from puerperal fever were recorded in Manchester, 2 in Barrow-in-Furness, and 2 in Burnley. With reference to the notified cases of infectious diseases in these towns during November, it appears that the proportion of the population reported to be suffering from one or other of the eight diseases specified in the accompanying table was equal to 7·7 per 1,000, against 9·0 and 8·3 in the two preceding months. No case of any of these diseases was reported during the month under notice in Ripon, and only one in Leek, Llanelly Stafford, and Weymouth; and while the proportion did not exceed 2·0 per 1,000 in Bury, Heywood, and Jarrow, it ranged upwards in the other towns to 11·5 in Salford, 12·4 in Portsmouth, 14·8 in Wakefield, 22·1 in Bolton, and 23·5 in Burnley. Scarlet fever was proportionally most prevalent in Blackburn, Darwen, Portsmouth, Wakefield, and Burnley; diphtheria in Derby, West Ham, Edinburgh, Norwich, Willesden, and Salford; typhus in Aberdeen; and enteric fever in Burnley, Norwich, Greenock, and Dewsbury. Three cases of puerperal fever were notified in Derby, and 3 in Manchester. No case of small-pox was notified during the month in any of the urban sanitary districts.

SIGNIFICANT!—The *Sanitary News* says: From present reports throughout the country (America) regarding plumbing work, there need be no doubt that the plumbers will have turkey for Christmas.

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Table showing Sickness and Mortality in Large Towns of England and Scotland during the Month of November 1889.

Towns.	Estimated Population middle of 1889.	Small-pox.		Scarlet Fever.		Diphtheria.		Typhus Fever.		Enteric Fever.		Cholera.		Relapsing Fever.		Puerperal Fever.		Totals of Preceding Columns.		Annual Rate per 1,000 Persons Living.		Deaths from other Zymotic Diseases.				Total Mortality from all Causes per 1,000 Persons Living.
		Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Ill-defined Fever.	Measles.	Whooping-cough.	Diarrhœa.	
Aberdeen	121,448	—	—	13	—	4	2	8	—	26	1	—	—	—	—	—	—	51	3	5·1	0·3	—	4	3	4	19·7
Accrington	39,000	—	—	10	—	—	—	—	—	1	1	—	—	—	—	—	—	11	1	3·4	0·3	—	3	1	—	14·0
Ashton-under-Lyne	40,488	—	—	7	2	—	—	—	—	5	3	—	—	1	—	—	—	13	5	3·9	1·5	—	—	—	—	22·5
Barrow-in-Furness	50,000	—	—	24	—	1	—	—	—	1	2	—	—	—	—	1	2	27	4	6·6	1·0	1	—	3	1	13·9
Birkenhead	102,300	—	—	33	2	3	—	—	—	18	1	—	—	—	—	—	—	54	3	6·4	0·4	—	1	2	1	14·3
Blackburn	122,000	—	—	74	7	—	—	—	—	16	2	—	—	—	—	—	—	90	9	9·6	1·0	—	5	2	5	20·3
Blackpool	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bolton	114,670	—	—	175	9	7	2	2	—	10	6	—	—	—	—	—	—	194	17	22·1	1·9	—	1	5	4	21·8
Bradford	235,056	—	—	40	3	1	1	—	—	15	7	—	—	—	—	—	1	56	12	3·1	0·7	1	16	6	5	23·2
Burnley	80,000	—	—	158	6	2	—	—	—	20	1	—	—	—	—	—	2	180	9	23·5	1·2	—	—	—	2	17·7
Burton-on-Trent	47,493	—	—	27	3	4	1	—	—	2	1	—	—	—	—	—	—	33	5	8·5	1·3	—	7	4	1	21·5
Bury	60,359	—	—	2	1	1	2	—	—	2	1	—	—	—	—	—	—	5	4	0·9	0·7	—	—	—	2	16·8
Cheltenham	46,950	—	—	9	—	5	—	—	—	3	—	—	—	—	—	—	—	17	—	4·7	—	—	—	1	1	14·2
Chester	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Croydon	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Darwen	34,500	—	—	22	1	—	—	1	—	3	2	—	—	—	—	—	—	26	3	9·4	1·1	—	—	—	—	18·2
Derby	98,525	—	—	33	1	12	4	—	—	9	2	—	—	—	—	3	—	57	7	6·0	0·7	—	—	1	3	15·6
Dewsbury	33,000	—	—	2	—	3	—	—	—	16	2	—	—	—	—	—	—	21	2	7·7	0·7	—	—	—	—	P
Dundee	163,300	—	—	19	—	9	5	2	—	8	2	—	—	—	—	—	—	38	7	2·8	0·5	—	9	3	3	15·1
Edinburgh	266,900	—	—	123	5	41	14	3	1	44	7	—	—	—	—	—	—	211	27	9·6	1·2	—	25	6	4	18·5
Greenock	78,248	—	—	38	—	2	1	—	—	25	4	—	—	—	—	—	—	65	5	10·8	0·8	—	—	6	3	18·5
Guildford	13,428	—	—	—	—	3	1	—	—	—	—	—	—	—	—	—	—	3	1	2·7	1·0	—	—	—	—	17·2
Halifax	81,200	—	—	13	—	2	2	—	—	5	1	—	—	—	—	—	—	20	3	3·2	0·5	—	—	—	—	21·7
Hartlepool	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Heywood	25,000	—	—	1	—	2	2	—	—	—	—	—	—	1	—	—	—	4	2	1·9	1·0	—	—	—	—	20·4
Huddersfield	92,825	—	—	21	—	5	—	—	—	3	—	—	—	—	—	—	1	29	1	4·1	0·1	—	—	—	1	17·7
Jarrow	31,000	—	—	—	—	1	—	—	—	1	—	—	—	—	—	—	—	2	—	0·8	—	—	—	—	—	16·8
Kngstn.-on-Thames	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Lancaster	27,740	—	—	10	2	—	—	—	—	—	—	—	—	—	—	—	—	10	2	4·4	0·9	—	—	1	1	18·9
Leek	13,700	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	0·9	—	—	—	—	—	18·7
Leicester	150,520	—	—	68	2	12	—	—	—	12	3	—	—	—	—	—	—	92	5	8·0	0·4	—	—	1	—	16·5
Llandudno	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Llanelly	22,828	—	—	—	—	—	—	—	—	1	1	—	—	—	—	—	—	1	1	0·5	0·5	—	10	3	2	31·5
Macclesfield	37,514	—	—	6	—	—	—	—	—	—	—	—	—	—	—	—	—	6	—	2·1	—	—	1	2	2	19·8
Manchester	378,800	—	—	222	23	43	11	2	2	58	6	—	—	—	—	3	3	328	45	9·0	1·2	1	6	12	22	24·8
Nelson	16,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Newcastle-on-Tyne	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Norwich	94,510	—	—	10	—	20	3	—	—	21	4	—	—	—	—	—	—	51	7	7·0	1·0	—	—	1	—	14·5
Nottingham	237,812	—	—	120	3	—	2	—	—	26	1	—	—	—	—	—	—	146	6	8·0	0·3	—	23	2	8	15·4
Oldham	142,405	—	—	45	4	2	1	—	—	6	2	—	—	—	—	—	—	53	7	4·9	0·6	—	2	4	2	17·9
Portsmouth	141,354	—	—	103	2	9	1	—	—	23	2	—	—	—	—	—	1	135	6	12·4	0·6	—	—	11	3	16·7
Preston	104,194	—	—	25	3	3	1	—	—	15	8	—	—	—	—	—	—	43	12	4·3	1·2	—	7	4	7	24·5
Reading	60,654	—	—	—	1	1	—	—	—	1	—	—	—	—	—	—	—	2	1	4·3	2·2	—	—	—	1	11·0
Ripon	7,670	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	23·8
Rotherham	36,482	—	—	14	8	—	—	—	—	—	1	—	—	—	—	—	—	14	9	5·0	3·2	—	—	—	—	29·3
Salford	234,283	—	—	98	12	69	21	—	—	39	1	—	—	—	—	—	—	206	34	11·5	1·9	1	3	4	9	17·9
Stafford	20,600	—	—	1	1	—	—	—	—	—	—	—	—	—	—	—	—	1	1	0·6	0·6	—	—	—	—	17·1
Stalybridge	27,938	—	—	8	1	—	—	—	—	1	—	—	—	—	—	—	—	9	1	4·2	0·5	—	—	1	—	19·1
Sunderland	134,193	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Torquay	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Wakefield	33,360	—	—	27	4	1	—	—	—	3	2	—	—	—	—	—	—	31	6	14·8	2·9	—	—	4	—	22·9
Warrington	48,200	—	—	15	1	—	—	—	—	1	—	—	—	—	—	—	—	16	1	4·3	0·3	—	16	8	2	23·8
West Ham	180,000	—	—	96	8	18	1	—	—	27	3	—	—	—	—	—	1	141	13	9·5	0·9	—	2	3	2	15·5
Weymouth	14,008	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	1	—	0·9	—	—	—	—	1	19·0
Wigan	53,767	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Willesden	52,915	—	—	20	—	13	1	—	—	2	—	—	—	—	—	—	—	35	1	8·6	0·2	—	—	—	—	12·3
York	75,127	—	—	22	—	1	—	—	—	12	2	—	—	—	—	—	—	35	2	6·1	0·3	—	3	1	1	15·6

SPECIAL REPORTS, ABSTRACTS, &c.

SOUTH AMERICA AS A FIELD FOR THE SANITARY ENGINEER.

(By our Special Correspondent.)

PARTLY impelled by curiosity, partly by medical advice to take a sea-trip on the score of health, I determined to visit the South American Continent, or such portions of it as time would permit of, Brazil and the Argentine especially being my goal. The rumours which had been flying about London for some time past, regarding the great scheme of drainage and sanitation said to be in course of construction at Buenos Ayres, the large quantities of sanitary ware and similar materials which the Board of Trade Returns informed us were being shipped to that city, coupled with the information given to me by one who had only recently returned from the country, that it would be difficult to teach its inhabitants anything new in sanitary science, made the prospect of the trip specially interesting.

But before I say anything about the great Southern Republic, let me record a few facts in connection with that much-abused and much dreaded city, Rio de Janeiro, the capital of Brazil. As we steamed into the bay and harbour of Rio early one fine morning in September, I thought I had never witnessed a grander sight in my life. Before us lay the city, its clean, light-coloured buildings looking the more bright under the rays of the morning sun. Above it, nestling amongst the hills by which it is surrounded, we saw some of the suburban districts; San Theresa, said to be the most healthy, occupying a prominent position, the great sugar-loaf mountain within pistol-shot on the one side, and the popular hill known as Cocovardo, up which runs a railway with, I believe, the steepest gradient in the world. Behind all these towers that range of lofty mountains which adds so much to the grandeur of the scene, but tends materially to lower the health of the city, by closing it in on all sides, and thus depriving it of those currents of fresh air of which it stands so much in need.

Rio Harbour is generally admitted to be the grandest in the world. That of Sydney may be thought more beautiful, and there is, perhaps, not much difference in their size, but in Rio Harbour the combined navies of the universe may anchor comfortably and have room to spare. I must confess that from the accounts I had heard in England of the frightful epidemic that ravaged this and a few other places in Brazil during the last summer, I approached Rio de Janeiro with some little anxiety, but my peace of mind was soon restored when the officers from the Health Department boarded us and reported the hygienic state of the city to be better than it had been for years past. An exceptionally hot summer had been followed by an equally exceptional but cool winter and spring, Speaking individually, I could not trace any difference, during my stay, between the climate there and that of an ordinarily fine September in England. It may, perhaps, have been a little warmer at times during the middle of the day, and one was often reminded of the West of England by the humidity of the atmosphere. As the English colony is increasing here yearly, and English capital is providing the sinews of war for all the important undertakings, let me advise those who may be thinking of making this country their home not to be led away by the tales they hear at home. Had I died the day I landed from some fever, had I met my death from the bite of a poisonous snake, which according to some Job's comforters was to be met with in every garden or wherever a patch of herbage existed, or had I been bitten by mosquitos to such an extent that my own family would not have known me, it would not have been at all astonishing to me. These and sundry other dangers and discomforts were placed before me most vividly, but, strange to say, I have scarcely experienced anything in Rio de Janeiro worse than I should have found at home. I am free to admit I am here in the early spring, and that with the hot weather the dangers may increase; but, as regards mosquitos, I have not once been bitten, although I see them daily, simply because my bed is furnished with mosquito-curtains, so well arranged, that it is my own fault if I allow one of these pests to get inside my curtains. Creeping things exist more or less everywhere, especially in tropical climes, but why Rio should be made a bugbear in this respect I cannot tell. The fact is, it is the yellow fever and other epidemics now and then prevalent in Brazil which have affixed a black mark to the name of Rio, and that makes mountains out of molehills of minor annoyances. That the last epidemic was due to unsatisfactory sanitary arrangements there can be no doubt, but it was not from want of a good system of main drainage so far as the sewers and house drains are concerned, but from lack of that indispensable necessity, a copious supply of water, and also partly from natural causes. I have already mentioned that the last summer was an exceptionally hot one, and a long and continuous drought beforehand had materially lessened the supply of water, apparently at no time too abundant for the requirements of the city; consequently the sewers were deprived of their necessary flushings, of which the effects so caused can be easily imagined. From every street-grating odours of a most poisonous character were given off to the atmosphere, so that the inhabitants were constantly breathing a poisoned air, and disease quickly ensued. It is, however, erroneous to charge the excessive death-rate that ensued to yellow fever. I have been at great pains to arrive at the facts of the case, and from reliable authority, I am enabled to state that the deaths from the fever in question were trifling in comparison with the great sacrifice of life that occurred from other causes. These were, in the main, two—sunstroke and a putrid fever, very nearly akin to typhoid, and the latter there can be no doubt was induced and accelerated by the two causes I have mentioned. I have seen the original official statistics of the death-rate during the epidemic, and in the month of March, when the rate of mortality was highest, there were only 25 deaths from yellow fever. I mention this more particularly that people in England may not run away with the idea that whenever excessive illness exists in these parts it is due entirely to yellow fever. This complaint, like many diseases we have amongst us at home, is always present more or less in these countries, but it is more prevalent amongst the lower orders, who are described as being dirty in their habits and careless as to their healths surroundings. I fear also that the authorities do not exercise the supervision over them that we do in England, and which common prudence would suggest in a country where the temperature is so high during a great portion of the year.

Were it not for the efforts of the Rio City Improvements Company, matters would be much worse. This company, an English one, received their charter, or concession, from the Brazilian Government so far back as the year 1857, but it was 1862 before their various works were built and they commenced operations. Their principal function is to control and utilize the entire sewage of the city, subject only to the supervision of the Government Inspector, and they are under heavy penalties should they neglect their duties or cause an avoidable nuisance. For this work they are paid an annual subsidy by the Government, and to every new house that is built they have to make the drains to the main sewer. They also either supply the sanitary fittings to the house or see that those placed in it are of suitable character, and not likely to cause offence or danger to the inmates. The company have six pumping stations in different parts of the city, all abutting upon the bay, with wharves, on which are unloaded all their appliances and materials, which it is almost unnecessary to add come from England.

The mode of treatment of the sewage is as follows:—The sewage from a certain district is brought in a main to its station; here, as it enters the company's premises, it is treated with a mixture of lime, sulphato of

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alumina, and charcoal; it then passes on to precipitating tanks of the usual character, and, after precipitation has been effected, and the effluent been allowed to travel through a series of narrow canals, it is discharged into the bay inodorous, and of a standard of purity which I was informed by Mr. Benest, the courteous managing director of the company, was much higher than required by the Rivers Pollution Committee in England. Without going into further details, I can safely say that, from whatever point of view it may be criticized, the mode of treatment of the Rio sewage is as good if not better, than the most approved arrangements we have in England.

The residuum, is dried and burnt twice. The first burning gives back a lime, which the company either use for their own purposes or sell, if they have an excess. The second burning reduces it to a hard clinker; this is ground, and, I am assured by the managing director, makes as good a cement as the best Portland they can purchase. In Brazil manure is not required, but as nearly every house is faced with cement, there is an enormous demand for the article; hence, by utilizing the sewage in this manner, the company obtain a valuable marketable commodity. I must say, I was much astonished at finding in this much-abused place so perfect a system of sewage disposal, so admirably carried out without nuisance to the inhabitants. I was, however, surprised to hear how little some of the leading inhabitants knew of the manner in which their sewage was disposed of, some of them believing that it was discharged into the bay in its normal condition. I mentioned this to Mr. Benest, who smilingly replied: "From what I have shown you, you must see that the sewage is too valuable an article for us to throw away if we can avoid it, but you shall see and judge for yourself." He then explained to me that in time of excessive rains—and we in England know very little of tropical rains—owing to the flat surface of the city, the storm water (which goes into the sewers) would soon cause an inundation if it were not allowed to escape, consequently arrangements have to be made for its disposal at each station. In such cases it is necessary for a time to open a sluice, instead of attempting to pump it into the tanks, and allow the whole to run into the bay. But whenever it is found to be necessary to do this, the fact has to be immediately notified to the Government Inspector, who visits the station, and when the penstock is closed, writes down the day and date on which it was opened, and signs the document. It is then affixed in such a manner that the penstock cannot be lifted without destroying the notice, and the Government seal is affixed to it.

By this time we had reached the outlet, and, pointing to it, my conductor said: "See how often we abuse our privilege," and there, with the sign-manual of the inspector, was the intimation that it had been opened for a certain time on April the 25th last, and it was then September the 17th.

I am taking some of the products of the sewage back to England with me, and I think they will not be without interest to some of our sanitary experts. I cannot help thinking that the relegation of the sewage of a town to an independent company, such as I have described, may be adopted with advantage in England. Direct responsibility is obtained, and any non-fulfilment of conditions, or creation of nuisance, visited with heavy penalties. Since the Rio Company has been at work, the decrease in the death-rate has been marvellous. At the time in question it amounted to 75 per 1,000, the normal average is now 25. The water supply of Rio is excellent as to quality, could we always drink it near its source, but somehow it has got a bad name in the town, and I have been advised by the leading English physician here not to drink it unless boiled or filtered in a reliable apparatus. Whether the water becomes contaminated in any way as it enters the town, no one seems to know, though assertions are made, but without proof, that it is impregnated with sewage. As the water is conveyed in the usual cast-iron pipes, each section being sealed in the same way as in England, and as the pipes are at a higher level than the sewers, I cannot see how impregnation from sewage can take place; but, nevertheless, many people are shy of drinking the water in its normal condition; at any rate, the sons of Albion, from what I see of them, are not likely to poison themselves from imbibing it even in small quantities. It is probable, however, that the main sewers may want overhauling, as I find it has been necessary in one district to relay one of them the length of a street, and as the Government have just raised a new internal loan of £10,000,000 sterling, and talk of devoting a considerable sum to sanitary purposes, it would be well if the whole range of main sewers were examined.

I wish I could say as much in favour of the streets of Rio as I have of the disposal of the sewage. I am alluding to the central portion of the town, where the best shops and the principal business houses are located. Outside this area, and as you approach suburban districts, there is not much to find fault with, but the part I have mentioned is disgraceful in the extreme, and I doubt if any capital city in the world could be found so bad. All these streets are about the same width, only allowing one vehicle to pass another. Every street, with one exception, the Rua de Ovuador, the principal one, has a tramline in it, placed close to the pathway, and as the tram-cars are open and the seats ranged crosswise, a footboard is necessary, and this projects some inches over the pathway. The pedestrian has to be constantly on the alert so that the leg is not struck by this plank, and as not more than two people can walk abreast on the footpath, the danger is great, and I cannot but believe that serious accidents must at times occur. I have had some narrow escapes, not only from this cause but from horses and vehicles coming on to the pavement, which they do without the slightest hesitation if necessary in passing each other, and as the footway is laid on a level with the road, there is no difficulty in their doing so. It is no uncommon thing to see a cart drawn up on the pathway close to a warehouse, loading or unloading, and the foot-passenger has to walk in the road to pass it, while trucks and packing-cases are constantly met with under similar circumstances. The roads and pathways are vilely paved, with great ruts where they are least to be expected, which makes the streets dangerous to walk through after dark, and when it rains to any extent, portions of them become absolutely impassable.

I have remarked to friends that I wonder the Government have never entrusted the proper paving of the streets to the hands of a company, seeing that the control of the sewage has worked so well. But, like most tropical races, the Brazilians are lethargic. When a danger is in their midst, they bestir themselves out of very fear, and propose to do most wonderful things, but as soon as it is past they sink back into their lethargy and forget the past and their own vaunted intentions. It is not too much to say that all the great enterprises in the country have been promoted by and carried out by Englishmen and English capital, and there is plenty of room for more to be employed with success.

Here is a country nearly as large as the whole of Europe, abounding in agricultural and untold wealth, and with a population of less than 14,000,000. That this country must in time, in common with others, on this vast continent, be largely peopled by settlers from the Old World is a certainty, as they are now slowly but surely pouring into it; but the English do not flock to it like the peasantry of Spain, Portugal, and Italy. Most Englishmen who come here have appointments to take up on their arrival, and consist chiefly of skilled artisans, engineers, railway and bank employés, &c. Under the present depressed state of agriculture at home, the farm labourer, if sent out under proper conditions, would find a field for his labour which he will never get at home, and probably more remunerative in the near future than in any of our own colonies. In the interior, on the higher lands, where the great growing industries, such as coffee, sugar, &c., are carried on, the climate is quite different to that of the lower or coast towns, and I have it on the

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authority of an Englishman who has been long resident in the country, that he considers the lives and property of British subjects are as safe in the Brazils as they are at home.

The scope for sanitary engineering is immense. Santos, which also suffered so much during the last summer, is going to set her house in order, and the Provincial Government of San Paulo, one of the most thriving towns in the kingdom, has recently sent one of her most trusted medical men to Europe to study the different sanitary systems, with a view to adopt the best. This gentleman, who was returning home in the same ship in which I sailed, told me that he found England was the only place to go to for good sanitation, and that whatever they did in his city would be based on English systems.

I was very pleased to find that the Health Department of the Government are subscribers to the SANITARY RECORD, so also are the Rio City Improvements Company, but as these copies are orders of the English bookseller at Rio, and by him of his London agent, I do not suppose you know anything of it.

I was fortunate in being favoured by an introduction to, and audience of, the Emperor, whom I visited at Tujuca, about two hours' ride from the city, amongst the hills by which it is surrounded. It is a charming and magnificent locality, and a favourite spot with the Emperor, when the cares of State do not demand his residence in the official place. I found him a charming conversationalist and very much interested in health questions. Before I left him he asked me to forward him the work you published on the Healtheries Exhibition at South Kensington. It was very gratifying to me to find the SANITARY RECORD was making its influence felt in this important country.

THE SOCIETY OF MEDICAL OFFICERS OF HEALTH, Nov. 8, 1889.

ADDRESS BY THE PRESIDENT, HENRY E. ARMSTRONG, M.O.H. NEWCASTLE-ON-TYNE, ON THE EDUCATION, TRAINING, AND QUALIFICATIONS OF THE MEDICAL OFFICER OF HEALTH.

MR. ARMSTRONG said that the questions that he had taken for the subject matter of his address had, of late, attracted much attention both in and out of the profession. "There was now a strong feeling that the medical officer of health should no longer be allowed to learn his profession after his appointment to office, and gain his sanitary knowledge, perhaps after a series of ghastly failures, at the expense of the community by whom he was engaged." Time was when only the ordinary qualifications for medical practice could be required, when, in the early dawn of the science of public health, "its votaries had to grope their obscure way with feeble and uncertain step, but those days were past and they now walked in the light secure and firm." The necessity of an acquaintance with at least the elementary principles of preventive medicine by men engaged in the practice of the healing art was so far recognized that the Medical Council recommended that it should form part of the curriculum of all students, but how much more was this incumbent on those who devoted themselves to the prevention of disease? As long ago as 1877, this had been boldly urged by Dr. Thos. Stevenson in his presidential address before this society, and it was now more fully recognized by the public. "The idea that prevention could not be divorced from cure was fast being replaced by the conviction that the union of the two was objectionable on the ground of incompatibility of principle and interest," and he hoped that the appointment to small sanitary districts of men engaged in general practice, already less general, would ere long be discontinued." The need also of special qualifications in public health was now more than ever felt, alike by sanitary authorities and by competitors for appointments. Until last year, however, it had received no recognition on the part of the Legislature. The first step in this direction appears in clause 18 of the Local Government Act of 1888, which enacted that after the year 1891, no person should be appointed medical officer of health to any district or combination of districts having at the last census a population of 50,000, unless he held, in addition to the qualifications hitherto required, a diploma in public health, and unless he had been for the three years immediately preceding, medical officer of health to a district with a population of 20,000, or been for the like period a medical inspector under the Local Government Board, while the Burgh Police and Health (Scotland) Bill would, should it become law, demand the possession of such special qualification in public health of all medical officers of health without exception, and, moreover, discountenance their being engaged in private practice.

Considering the wide range of subjects with which the medical officer of health must be theoretically and practically conversant, including law, engineering, chemical, biological, and other purely scientific subjects as well as statistical practice, and social questions and administration, which could not be acquired without prolonged study, and the amount of training demanded for the investigation of the most difficult problems affecting the causes and prevention of disease, Mr. Armstrong was of opinion that not only ought there to be instituted higher degrees in public health and state medicine, corresponding to, and ranking with, that of Doctor of Medicine, but that the aspirants to such might well be exempted from much of the ordinary curriculum of other students, already too heavy for the customary period of study. Surgery, midwifery, and materia medica were matters with which the medical officer of health had no concern, and the practical work of his department might be accepted in lieu of a portion of the clinical practice at present insisted on.

If the departments of curative and preventive medicine were to be thus separated, a great development of the means and opportunities for the study of the latter at the universities and medical schools must be effected. Hygiene, at present, was treated as a minor subject, and as regards the general practitioner, it was indeed one with which, as with forensic medicine, he needed but a general acquaintance. But a grave defect in the existing system of medical education, from which all students alike suffered, was the absence in nearly all schools of any opportunities for the clinical study of infectious diseases. Few practitioners comparatively had ever seen a case of typhus; all had to familiarize themselves with small-pox and scarlatina, with measles and varicella after they had engaged in private practice, often to the injury of the patients under their care. Every officer of a hospital for infectious diseases could testify to the unfortunate errors of diagnosis, by which cases of dangerous disease were retained at home until other individuals contracted the same, while patients suffering from non-infectious ailments were, especially in times of panic, sent to fever and small-pox hospitals.

Reviewing the conditions under which the existing diplomas in public health were granted, Mr. Armstrong insisted on the necessity for a period of pupilage or practical training in the office of a medical officer of health to a large district, as recommended by the Medical Council, as a condition that should be required, in addition to study in the lecture-room and laboratory, for admission to examination. The want of this was too often felt by young medical officers when called on to report on insanitary dwellings, to advise on the construction and management of infectious hospitals, or to give evidence in courts of law.

For some time to come, actual practice as a medical officer of health for a term of five years, or other period, might be accepted in lieu of pupilage. But the medical officer of health, however well prepared to enter on his duties, required to keep himself abreast of the progress of his science, and Mr. Armstrong considered that men in charge of large sanitary districts had a right to claim that they should be regularly supplied with the Reports of the Local Government Board, and all similar official publications in the interest not only of themselves, but of the people for whose welfare they were accountable.

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EPIDEMIOLOGICAL SOCIETY OF LONDON.

At the meeting on Nov. 18, Sir T. Crawford, K.C.B., M.D., LL.D., in his inaugural address thanked the members for the honour they had conferred upon him in electing him President for the ensuing year, and alluded to the good work done by the Society during the forty years of its existence in promoting correct views as to the nature, causation, and prevention of the diseases commonly known as epidemic, and in combating the erroneous notions, still too prevalent among the non-medical public, which had their origin in ignorant and superstitious dread of the "pestilence that walketh in darkness." He recited the aims of the Society as enunciated in the articles of its incorporation, remarking that though the "Transactions" of this Society, and of others that had of late years engaged in the same field, the reports of the Local Government Board and of the medical departments of the army and navy bore witness to an immense amount of useful work in tracing the causes of preventible disease, much still remained to be done before the public should be educated into realising that they were individually and collectively responsible for a large proportion of the deaths, illness, and loss of labour and money consequent theron, which they were too much inclined to refer to the mysterious dispensation of Providence instead of to their own violation of physiological laws. Many of the expressions in common use even among the best informed were but indications and cloaks of our ignorance, such especially as epidemic prevalence, constitutions, influences, waves, &c., and would, with the progress of clearer knowledge, be modified or discarded, as the true causes of the prevalence and progress of these diseases should be more clearly recognised. Quoting Sir W. Jenner's opinion that the acute specific diseases "dissimilar as they are in their pathology, are so intimately connected in their etiology that the removal of the causes of one of the groups would certainly and greatly diminish the mortality from all," he said that the materials afforded by the reports of the mortality and sickness of the British army, scattered as it was over every quarter of the globe, under conditions more fully ascertainable than those of the civil population, presented a rich mine of data on which to base conclusions of the highest practical value, the more so as its stations were distributed over most of the regions where epidemic diseases prevailed, and along the routes of commerce by which they were believed to be carried through human intercourse, its average strength for the year 1887—from which he would draw his statistics—having been 195,932, exclusive of our native Indian forces and local colonial troops. He would confine his figures to the sub-group (1) of general diseases in the nomenclature of the College of Physicians, or the 22 often described as zymotic, and his remarks mainly to enteric fever. The strength of the troops for the time being quartered in the three divisions of the United Kingdom, and the rates per 1,000 of admissions, deaths, and men constantly sick, were respectively for—England, 72,329; 17·2, 0·40, 0·99. Scotland, 3,635; 13·2, 0·27, 0·57. Ireland, 25,150; 20·2, 0·48, 1·09. Of the total admissions under this head in the United Kingdom, 137 were of enteric fever, of whom 25 died, being just two-thirds of all deaths under this group. England contributed 61 cases with 16 deaths; Scotland, 3 cases with 1 death; Ireland, 73 cases with 9 deaths. No military district was entirely exempt; but in many instances no cause was assigned, and in some the cases were believed to have been imported—that is, contracted elsewhere by men on leave of absence. In a large proportion, however, the fever was evidently due to bad drainage and impure water—notably at Shoeburyness, where a foul open sewer from the village was held to account for 5 cases with 4 deaths, and at Parkhurst 4 cases with 2 deaths were ascribed to an impure water supply; 50 cases with 4 deaths were reported from Dublin alone. The sanitary condition of the barracks had always been very unsatisfactory, and measures had been undertaken for their improvement, but those of the city itself, and especially the horrible state of the river Liffey, must be greatly altered before Dublin could be rendered a healthy station. There were 745 admissions under the head of eruptive fevers, including 7 with 1 death from small-pox, and 185 with 8 deaths from scarlatina. No fewer than 689 cases were reported as "continued fever," and 96 of "dysentery" with 1 death. He next dealt in order with foreign stations, but only a few of these call for special notice. At Gibraltar the average strength of the garrison was 4,614. The ratio per 1,000 of admissions under this group, 31·4, of deaths 1·95, and of constantly sick 4·28. Enteric accounted for 35 cases and 9 deaths, "continued fever" for 105 without a death. Most of the latter here and elsewhere should properly have been returned as enteric, of which they were doubtless the milder cases, the mortality would then have been 1 in 14 instead of 1 in 4. Indeed, the medical officer observed that they came from the same barracks, at the same time, and they ceased together when these were vacated or the sanitary defects had been remedied. In every case blocked drains, dry and ineffective traps, rat-holes communicating with disused drains under the floors, were discovered. These diseases were confined to three regiments quartered far apart, the rest of the garrison escaping. In the case of two regiments, it was held to have been brought from Egypt, and was so, no doubt, in the West Kent, from which it soon disappeared; but in the South Staffordshire the fever was limited to a detachment occupying a particular barrack, the remainder of the regiment quartered in another not having suffered at all. Malta, strength 5,499, ratio of admissions 110·7, of deaths 2·72, constantly sick 10·66. Enteric fever gave 14 cases with 5 deaths, "continued fever" 570 with 7 deaths. The enteric fever could not have been owing to the insanitary state of the wine shops, as the medical officer conjectured, for the Fencibles, a local corps, were entirely exempt, as were the British troops in Valetta, who alone were provided with water from the aqueduct. It must, therefore, be referred to local conditions, especially the water supply. In other stations, too, the so-called "simple continued fevers" should be for the most part added to the enteric, if only from a consideration of the mortality, notably in Ceylon, where 10 cases of enteric are reported to have included 7 deaths, and 67 of continued fever none. Combined, they give a mortality of 1 in 11. Both Colombo and Galle were riddled with cesspools. Coming to India, where one-third of our army was constantly stationed, the reports from Bengal with 40,921 troops showed 538 cases of enteric with 166 deaths and 3,483 of continued fever with 5 deaths. As elsewhere, the mortality ascribed to enteric alone was higher than could be reasonably accepted. The severest cases were almost exclusively among men between the ages of 20 and 23, and recently arrived in India. Cholera here figured largely, and dysentery, as in all tropical stations. In Madras, 35 of the 58 deaths under the group under consideration were referred to enteric fever, and nearly half of those in Bombay. Unfortunately, the same incredibly high mortality from enteric fever, and large item of continued fever, as well as an almost general absence of any definite recognition of the local causes, characterized all the returns from our Indian Empire. From Egypt came a melancholy description of insanitary conditions of every kind, with their natural consequences, and the relation of the rise and fall of the Nile, with its influence on the prevalence of fever. There were 26 cases of small-pox with 4 deaths, a proportion not so creditable as Sir Thomas thought to the system of revaccination in the army. Comparing these and the other figures which space compels us to pass over, the President considered that great strides had been made during the last thirty years in the sanitary administration of the army. But as to our knowledge of the etiology of disease, he believed we were still far from certainty. Notwithstanding the recent progress of bacteriology, he could not accept the germ theory as sufficient, in the face of sporadic cases occurring in the absence of any known previous local prevalence of the disease, nor was the pythogenic hypothesis more satisfac-

tory to his mind, since enteric fever had broken out at stations in Afghanistan probably never before occupied by man, at any rate in the last campaign. He could not look on enteric fever, diphtheria, &c., as originating, like small-pox, solely from contagion, but believed that the two great factors concurring in their production were filth and overcrowding. The former included all that we know as filth, the latter comprised not only insanitary conditions (of climate, as being beyond our control, he would take no account), but also the habits and food of a population. As regards the last, the extension of commerce had placed nearly all civilized nations on a level and in circumstances very different from those under which they were when they subsisted on the produce of their own soil, but there was no doubt that in the past the diverse characters of the peoples of these Islands had been to a great extent the result of their diet, might we not attribute to diet and surroundings the different susceptibility of different races to different forms of disease? He reviewed the evidence of Royal Commissions during the last fifty years on the housing and conditions of the working-classes in our rapidly growing cities, and pointed out the immense improvement shown by the average mortality, though even now these were bad enough in some localities; and referred, in passing, to the reports on the longevity and vitality of the Jews, and their physical development, as well as to the returns of the recruiting department of the army and the deliberations of the London School Board on the semi-starvation of a large proportion of the scholars. In any schemes for the suppression or diminution of preventible diseases, he was convinced that, valuable as might be the aid afforded by notification, isolation, disinfection, &c., the chief attention should be directed to the amelioration of the material and moral conditions of the masses, so as to render possible the development of a race of higher physique better able to resist the attacks of disease.

NOTES FROM IRELAND.

Labourers' Dwellings in Ireland.

In several of the unions in Ireland the agricultural labourers have of late given proofs of their strong disinclination to pay the rents fixed by the rural sanitary authorities on the cottages erected under the provisions of the Labourers' (Rural) Dwellings Acts. The most formidable demonstration of this kind has taken place within the last few weeks in Wexford Union, where the guardians, acting as the sanitary authority, have erected 290 houses with plots of half an acre attached to each, and have let them at the rent of 1s. per week. The annual cost of each cottage to the ratepayer is £5 4s., of which it will be seen that the tenant pays half, the outlay for maintenance, collection, and rates, calculated at 13s. per cottage, also falling on the ratepayer. A body of over 200 labourers held a meeting at the gate of the workhouse, in the board-room of which the guardians were at the same time assembled, and a resolution asking the guardians to reduce the rent from 1s. to 6d. per week was adopted by an overwhelming majority of the labourers, an amendment suggesting 8d. finding little favour. A deputation of ten labourers was sent to the board-room with this demand. The guardians pointed out that the suggested reduction would be unfair to the ratepayers; that for much inferior house accommodation, without any land, the labourers had been paying 1s. 4d. per week; that their wages were quite sufficient to pay the rent if their wives and families were industrious; that the labourers had agreed to pay 1s. per week rent; and that there were many labourers wanting more cottages which the ratepayers would not now be disposed to erect, to which the deputation replied, that the half acre plot was worth nothing when the cost of tillage had to be provided for; that their wages (4s. a week and food) were too small to pay the rent; that the future generation should pay their share of the cost of the cottages, and finally that they would "hold" the cottages. The Board then adjourned their decision on the subject to a future meeting. Meanwhile, however, Mr. Michael Davitt wrote a very sensible letter to the press pointing out the absurdity of the labourers complaining about a rent of twopence per day for the very greatly improved accommodation they were getting, and suggesting that the labourers should aim at an increase in wages rather than a reduction in rent. It further transpired that many of the labourers' wages ran to 5s. and 6s. per week, or 12s. without food, and that one of the deputation—the fortunate owner of two cows and half a dozen pigs—had boasted that he would not take £80 for the interest in his cottage. At their adjourned meeting the guardians unanimously adopted a resolution declining to reduce the rent.

In the Enniscorthy Union, the solicitor to the sanitary authority forwarded for execution some notices to quit against three tenants of labourers' dwellings who owed over six months' rent, but the Chairman said it was a terrible thing to take this step, and he would hesitate before signing. In this union a large number of the labourers owe from one to six months' rent.

In the Drogheda Union another phase of the subject is presented, for there many of the newly-erected cottages are vacant, and the old condemned dwellings have been re-occupied.

The expenditure in these three Unions on labourers' dwellings has been nearly £43,000.

Whether or not it is desirable in the true interests of the Irish labourer to provide him with relief in the shape of house rent, whether it improves his position, increases his self-respect, or, on the other hand, tends to pauperise him, are questions which need not now be discussed. The legislature has decided that he is to have this sort of "outdoor-indoor" relief at the expense of the rates, but it is certainly worth while to inquire how the administration of the Labourers' Acts—involving the expenditure of an enormous sum—has been carried out, whether the wants of the labourer have been duly met and the pockets of the ratepayer fairly taxed, and whether the management of the cottages when erected and occupied leaves anything to be desired in the interests of either party. Reading between the lines of the Wexford Union debate, it seems very clear that but for the timely intervention of Mr. Davitt the guardians would not have had the backbone to resist the demands of the labourers, and, in truth, it is rather early in the day to expect Boards of Guardians, which are very largely recruited from the tenant farmer class, to take an economic view of "rent" and to adopt the *rôle* of evictors.

NOTES FROM THE NORTH.

(From our own Correspondent.)

At the last meeting of the Newcastle City Council, Canon Lloyd, Vicar, presented a memorial, signed by about fifty of the ministers of the city, drawing attention to the alarmingly increased death-rate of the city, which, for the seven weeks previous to November 23, 1889, had reached the high average of 25·8 in the 1,000, which contrasted very unfavourably with the twenty-eight largest towns in the Registrar-General's weekly returns. In addition to other factors of disease, the memorialists urged that the existence of 20,000 middens, the number of tenements unfit for human habitation (mere fever dens), the insufficiency of the water supply to tenements, and over-crowding on the area and within the dwelling, were all causes that swelled these unsatisfactory returns. Canon Franklin, another of the deputation, urgently supported the prayer of the memorial. He said the returns for the previous six weeks pointed to an average mortality of 1,239 for twelve months of children under one year of age. He thought that fact deserved the consideration of the sanitary committee. After remarks on other palpable contributaries to the high death-rate, notably the over-crowding arising from the frequent demolition of property in the centre of the town, Canon Franklin remarked that what was now most wanted was really healthy dwellings within the reach of the poor

labouring class, as rooms at 1s. 6d., 2s., or even 8s. per week. Dr. Rutherford, another member of the deputation earnestly supported the memorial. The matter was ultimately referred to the sanitary committee.

The Medical Officer of Health for Gateshead (Dr. W. Robinson) applied to the Town Council at their last meeting for instructions to close certain unsanitary rooms which he declared unfit for human habitation; he also drew attention to a case of over-crowding, where he found thirteen persons occupying a house of three small rooms, so as to be dangerous and injurious to the health of the inmates as well as to others. The committee gave notice to the persons liable, for an abatement of the nuisance, and also for closing all places unfit for human habitation.

The question of the housing of the working-classes was prominently brought before the Walker Local Board at their last monthly meeting, when the clerk read a communication from the Local Government Board urging the necessity of paying attention to this important subject, and referring to the powers invested in the Board for that purpose. The medical officer of health (Dr. H. F. Hurst) commented strongly in his report upon the filthy condition of some parts of the district. The Rev. J. S. Beckwith drew attention to the extraordinary length of time (six months) which was allowed the owners to put their premises into a good sanitary condition. Dr. Aitchison thought the matter was fairly arranged, as it was discovered in many cases that the tenants were more culpable than the owners. The six months' notice for repairs, &c., was ultimately allowed to stand.

EDINBURGH SOCIAL AND SANITARY SOCIETY.

THE fifth annual meeting of this Society—Lord KYLLACHY in the chair. The report, which was submitted, referred to the want of sanitary arrangements in the dwellings of the poor. Allusion was made to the work of the Public Health Committee and the city sanitary officials, and to the way the Society was co-operating with these, but much still remained to be done in spreading sanitary knowledge among the poor. The Treasurer's report showed an income of £42 19s. 6d., and a balance in hand of 11½d. The Chairman described the work of the Society as a continual war with dirt and disease. He was afraid that as the population increased and the town extended the tendency to insanitary conditions was not diminishing, but rather increasing. The Rev. Dr. ALLISON, Newington, moved the approval of the report. BAILIE RUSSELL, in seconding, said all they pleaded for was that the poor should be put in such a position that it would be possible for them to be well. Mr. COOPER, burgh engineer, moved a resolution commending the Society to the support of the public. He regarded the Society as a great support to the city officials. The ladies of the Society could reach the springs of cleanliness and economy in a way the officials could not. If an official but hinted at a dirty house he was frowned upon. Mr. SMART, Glasgow, seconded, and the motion was adopted. Votes of thanks to the workers of the Society and the chairman were passed.

THE NATIONAL ASSOCIATION OF SANITARY INSPECTORS.

ON November 16 a meeting of the Central Council of the National Association of Sanitary Inspectors was held in the Town Hall, Halifax. Representatives from Leeds, Halifax, Tadcaster, Huddersfield, and Holmfirth attended. The Chairman (Mr. JOHN NEWHOUSE) presided. After the adoption of the minutes as read by the Hon. Secretary (Mr. JOSEPH LINDLEY), the correspondence of the Sanitary Institute and the Central Council with reference to examinations for sanitary inspectors was discussed, the general feeling being that the certificate now granted by the Sanitary Institute to candidates on passing the examination for sanitary inspectors was much below the standard desired, and was misleading to sanitary authorities. It was unanimously resolved that a deputation, consisting of the following members, Messrs. J. Newhouse (Leeds), W. Bland (Barton-upon-Irwell), J. Chambers (Bradford), T. Prescott (Gorton), A. Baines (Manchester), W. Wilkinson (Derby), J. Maguire (Huddersfield), and J. Lindley (Leeds), should wait upon the council of the Sanitary Institute, and urge upon the board the desirability of adopting the following resolutions, which were unanimously passed:—

That examinations for sanitary inspectors shall be arranged in two grades.

Candidates presenting themselves for examination in the first grade shall prove themselves to possess a competent knowledge of sanitary science, as also a fair knowledge of the duties required to enable the candidate to fill the position of assistant sanitary inspector.

Candidates presenting themselves for examination in the second grade must have held the office (chief or assistant) of sanitary inspector under a public sanitary authority for not less than two years, and shall be examined in advanced sanitary science; also shall give proof of a knowledge of building construction and sanitary plumbing.

That examination questions shall not be published or allowed to be taken away by candidates at any time.

That not less than two members of this association shall be members of the Examining Board.

That the advanced certificate only be recognized for holding the position of a chief sanitary inspector.

The following resolution was passed, and ordered to be sent to the President of the Local Government Board:—

That this association learns with regret that the Board of Guardians of the Malton district, Yorkshire, a district comprising 63 parishes, 18,000 population, and an acreage of 105,880, have appointed a person to fill the position of sanitary inspector to that population at a salary of £50 per annum; and this association is clearly of opinion that such appointment is simply an evasion of the law, which requires the Malton Board to appoint a sanitary inspector to safeguard the public health; and desires to call the attention of the Local Government Board to this latest instance of the necessity for fixing by law a minimum salary for sanitary officers and securing tenure of office, and that they be appointed during the pleasure of the sanitary authority appointing such officer.

A resolution was also passed in regard to the confirmation of the appointment of sanitary inspector for Skipton and Silsden, to which reference had been made in the SANITARY RECORD of August 15, p. 58.

That this association have heard with much surprise that the Local Government Board have declined to confirm the re-appointment of the surveyor and inspector to the Skipton and Silsden Sanitary Authority for a longer period than the first appointment, namely, one year. They therefore respectfully urge upon the Local Government Board to consider the desirability of approving the appointment of sanitary inspectors for such period as may be deemed expedient by the local authority appointing such officers.

SANITARY MATTERS IN GLASGOW.

(From our own Correspondent.)

Notification of infectious disease.

ON November 1, the Board of Supervision issued a circular to the Local Authorities of Scotland, drawing their attention to the New Notification Act, and recommending its adoption with the view of checking the spread of infectious disease in their respective districts. The following Scotch towns have already notification of infectious disease in operation in virtue of powers contained in their Local Police Acts:—Edinburgh, Dundee, Aberdeen, Kilmarnock, Hamilton, Coutbridge, and Greenock. The powers, however, contained in this new Act, are in addition to and not in lieu of any of those local Acts. Glasgow and several other large towns are making the necessary arrangements for its adoption, but the majority of the rural local authorities are leaving over the question to be dealt with by the new county councils under the Local Government Board, next spring. An important feature in the consideration of this question, is that of the *probable annual expense* to be incurred by any local authority which may adopt the Act. Mr. McKay, the Sanitary Inspector of the Burgh of Govan, has gone into this matter, and has arrived at some interesting results

which may prove of service to others. Taking the four large towns of Aberdeen, Dundee, Edinburgh, and Greenock, which have notification, he ascertained from the officials there the number of cases and deaths for the years 1887 and 1888 from small-pox, typhus fever, enteric fever, scarlet fever, diphtheria, these being the diseases which are compulsorily reported and common to all the four areas named; leaving out, at present, such diseases as cholera, croup, erysipelas, relapsing and puerperal fever. None of the latter are reported in any of the four towns, except puerperal fever in Dundee. From the tables which are given here it will be observed that during the two years 1887–88 there were 11,632 cases reported, and 841 deaths registered from the five principal infectious diseases in these four towns, and by calculating the proportion of deaths to the total cases, we find that 7·23 persons died out of every 100 of the cases reported, and as this is an actual, and not an average percentage, the results deduced therefrom will be more accurate and reliable. Adopting the ratio to Govan, the result would be 1,590 cases in two years; and calculating 62 cases for the other uncommon specified diseases, a total of 1,652 cases in two years, or 826 in one year, is arrived at. The cost of reporting is then easily ascertained. Of course severe epidemics of any of these diseases will upset all such calculations, and there will be a considerable amount of extra work entailed on the staff in visitation, disinfection, keeping of registers, &c., under the system of notification.

1887.

Diseases.	Aberdeen.		Dundee.		Edinburgh.		Greenock.		Total.		Govan.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths, including Hospital.
Small-pox ...	41	2	—	—	—	—	—	—	41	2	—	
Typhus Fever	27	5	80	8	38	11	28	6	173	30		6
Enteric ,,	86	16	115	10	332	38	72	7	605	71		5
Scarlet ,,	658	29	4,186	166	2,567	145	286	11	7,717	351		29
Diphtheria ...	26	7	32	17	256	57	27	19	341	100		19
Totals ...	838	59	4,413	201	3,213	251	413	43	8,877	554		59

1888.

Small-pox ...	4	—	5	1	1	—	5	—	15	1		—
Typhus Fever	17	3	28	5	23	5	47	8	115	21		7
Enteric ,,	81	14	119	15	245	27	102	9	547	65		6
Scarlet ,,	202	6	649	37	618	20	261	14	1,730	77		20
Diphtheria ...	16	7	44	24	255	65	33	27	348	123		23
Totals ...	320	30	845	82	1,142	117	448	58	2,755	287		56
Total for two years	1,158	89	5,258	283	4,355	368	861	101	11,632	841		115

A sub-committee of the Glasgow Town Council have of late been devoting much attention to the improvement or demolition of a number of the worst of the many old ruinous tenements in the Wynds. A brief description of one of these may be taken as a sample, viz. the one at 118½, Bridgegate. It is five storeys high, and in its immediate rear there is a back tenement four storeys high. The two tenements are separated by a span 9 feet broad, in which there is on outside stair leading to the first flat of the back tenement, where an inside stair begins, a turnpike giving access to the back tenement; and an ashpit and privy with two seats for the use of both tenements. The whole forms a block, bounded on the east by a passage 7 feet wide between it and the Bridgegate Free Church; on the south by Bridgegate, a 40-feet street; on the west by Aird's Lane, 12 feet wide; on the north by Goosedubs, 15 feet wide. Every yard of the *solum* is covered up to the edge of the streets and lanes. The street flat fronting Bridgegate contains three shops, of which only one—a public-house—is let. Fronting Goosedubs there are two small shops with rooms behind, in one of which artificial light is always needed. In the passage to the east, and in Aird's Lane, are two houses of two apartments, which are sub-let. They are badly lighted and ventilated. The upper flats of the front land have each originally had two large houses opening directly off each landing; but these are now sub-divided into two double and six single apartments. The third and attic flats are empty. The upper flats of the back land are also sub-divided into houses of one and two apartments. From the irregular shape of the plots of ground covered by these buildings, their internal sub-division has always been defective as regards light and ventilation, but the changes described have made the whole inner arrangement of apartments intricate to a degree, which cannot be understood but by an inspection or from a plan. "It is equally impossible to convey in words an adequate idea of the general condition of these tenements or their inhabitants; the ill-cared for, much-abused structure, and the filthy condition of the stairs and passages of the former, and the moral and physical degradation, without an effort at concealment, of the latter." The total rental is £196 10s., of which £55 is from the public-house. The mean general death-rate of this block has been ascertained to be 56 per 1,000, and the death-rate, under one year, 379 per 1,000. So far as the Sanitary Department have been able, they have done everything in their power to remedy matters by constructing new lobbies, ashpits, and privies; but it has been found impossible to make two tenements wholesome on space sufficient only for one, and that nothing but the total demolition of the back land will prove a remedy. It was agreed to take steps for this purpose, either under the Artisans' Dwellings Act of 1882, or Public Health (Scotland), but as the mode of procedure under the former is circuitous, tedious, and subject to appeal, it has been decided to try it under the latter Act.

Unhealthy buildings.

The case mentioned in last month's SANITARY RECORD was withdrawn from the Court by consent of both parties, but the question as to the right of the owner of unwholesome carcases to get possession for commercial purposes, other than those of human food, has not yet been definitely settled. A new case will be brought before the Sheriff in a few days, by a petition asking authority for sanitary inspector to destroy or so dispose of the carcases as to render them unfit for human food. The owner's plea will be that he does not intend to use the carcases for human food, but for chemical manufacturing purposes, and that the local authority in such circumstances have no right to interfere. The local authority are at present constructing tanks and other appliances at the five slaughter-houses in the city, for the purpose of immersing carcases in picric acid so as to prevent them being used for human food. This acid is said to have no injurious effect on them for "purposes of commerce."

Unwholesome butcher-meat.

It is said that the recent inquiry into tuberculous meat is to be reopened by the Butchers' Association, causing an appeal to be made to the Court of Session on a question of law. So far as the evidence and facts are concerned, the Sheriff's decision is final, but on application being made to him, and if he thinks fit, "a case may be stated" by him for appeal on the question of law only. In this case he has, however, declined to state a case on the question of law, and application is being made to the Court of Session for the purpose of compelling him to do so.

Tuberculosis in meat inquiry.

THE SANITARY INSTITUTE.

THE ordinary general meeting of the Sanitary Institute was held on November 27, Sir Douglas Galton, K.C.B., F.R.S., in the chair. A report was presented by the council on the work of the Institute during the past fifteen months. This work comprises a large number of objects.

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Lectures and demonstrations are given to the general public, besides special courses for ladies (which were personally patronized by H.R.H. the Duchess of Albany), medical men, and sanitary officers; altogether over 50 lectures, besides a large number of private demonstrations in the museum have been given.

The Congress and Exhibition was held in the city of Worcester, and in connection with it an important conference of medical officers of health. The question of sanitary legislation and smoke abatement are receiving the attention of the Institute. One of the most important branches of the work is the training lectures and examinations for sanitary officers. During the year three examinations have been held, and 144 candidates examined; 5 candidates have received certificates of competency as regards their sanitary knowledge to discharge the duties of local surveyors, and 69 candidates have received certificates of competency as regards their sanitary knowledge to discharge the duties of inspectors of nuisances.

Since these examinations were first established, 26 examinations have been held, and 718 candidates have been examined, of whom 62 have passed the examination for local surveyors, and 385 that for inspectors of nuisances, and it has now been arranged to hold provincial examinations, and the first to be held at Manchester at the end of this year.

About 200 members and associates have been added to the list of members since the beginning of January. There are over 750 members and associates now on the roll of the Institute.

THE SANITARY ASSOCIATION OF SCOTLAND.

A NEW revised constitution of this Association has just been prepared. The following are some of the principal items:—Its membership will consist of medical officers, sanitary inspectors, civil engineers, architects, and all persons interested in sanitary science. Local authorities who subscribe or grant donations to the funds shall be entitled to send representatives, who shall have all the rights and privileges of members. The management is vested in a president, vice-presidents, secretary, and treasurer, and a council of 18 members—6 of whom shall be medical practitioners, 6 sanitary inspectors, and 6 civil engineers or architects. One third of the council shall retire annually, but they shall be eligible for re-election. The council shall have power and authority to transact all the business of the Association, except when the Annual Congress is in session. Its decision may be appealed against at the annual business meeting, which may dismiss or sustain such an appeal. The annual membership fees are for ordinary members 5s., but life members may become such by one subscription of £3 3s. An Annual Congress of the Association will be held in some important city or town in Scotland, at which reports and papers on public health will be read and discussed. Other work of the congress to be the annual business meeting of association, election of officers and committee. A dinner will be held on the evening of the first day, and a popular public meeting on the evening of the last day of the congress. The objects of the Association are:—The advancement of sanitary science, and the diffusion of knowledge relating thereto; to grant certificates of competence for the position of sanitary inspector, and to persons desirous of becoming such or of obtaining the certificate. Exhibitions of sanitary apparatus and appliances shall be held from time to time as the council may direct, and certificates of merit awarded. All fees payable by exhibitors and the public shall be fixed by the council and belong to the Association. The council shall endeavour to secure the services of gentlemen specially qualified to give lectures on subjects relating to sanitary science. This constitution will be submitted to the general meeting of the Association which is to be held in Perth in July 1890.

THE EXAMINATION OF SANITARY INSPECTORS.

The first of the examinations for certificates of sanitary inspectors will be held in the rooms of the Faculty of Physicians and Surgeons, St. Vincent Street, Glasgow, on January 14 next. The written examination will take place from 9 to 12, and the oral from 12 to 4. The Association have appointed 17 examiners, viz.: Dr. J. B. Russell, Glasgow; Dr. Littlejohn, Edinburgh; Dr. Christie, Hillhead; Dr. McVail, Kilmarnock; Dr. Smith, Motherwell; Dr. Hay, Aberdeen; Dr. Nasmyth. Cowdenbeath; Dr. Duncan, Crosshill; Dr. Wallace, Greenock, Messrs. P. Fyfe, Glasgow; G. A. D. McKay, Edinburgh; G. McKay, Govan; K. Cameron, Aberdeen; A. S. Edmiston, Rutherglen; W. MacKison, Dundee; Wm. Neilson, Falkirk; J. C. Stobo, Rutherglen. As noted in our last, four of these examiners have been selected for the present year, other four will be drawn the following year, and so on in rotation. Up to the present time about 40 applications have been lodged by intending candidates. The fees are £2 2s. Non-successful candidates shall be entitled to be re-examined within twelve months without further payment.

The following are the subjects for examination in the syllabus:—

A thorough knowledge of the Public Health (Scotland) Act, 1867; Rivers Pollution Act, 1876; Sale of Food and Drugs Act, 1875; Housing of Working Classes Act, 1885; Health Clauses of the Local Government (Scotland) Act, 1889; Cattle Sheds in Burghs (Scotland) Act, 1866; Notification of Diseases Act, 1889; Dairies, Cowsheds, and Milkshops' Orders, 1879 to 1886; Bakehouses Act, 1863; Factory and Workshops Act, 1878; Factory and Workshops Amendment Act, 1883; Margarine Act, 1887; Artisans' and Labourers' Dwellings Act.

A knowledge of the principles of ventilation, and the simple methods of ventilating rooms. Measurement of cubic space.

A knowledge of the physical characteristics of good water; methods of water supply; means of preventing pollution; and the conditions of good drainage.

A knowledge of the various sanitary appliances for houses. Inspection of builders and plumbers' work.

A knowledge of what constitutes a nuisance arising from any trade, business, or manufacture.

A knowledge of the characteristics of good and bad food, so as to be able to recognize unsoundness.

Some knowledge of infectious diseases, the regulations affecting persons suffering from such diseases, and the best methods of disinfection.

Methods of inspecting dwellings, dairies, milkshops, markets, slaughter-houses, cowsheds, and offensive trades.

Scavenging, and the disposal of refuse.

Books recommended:—Louis Parkes or Wilson on *Hygiene*; *Our Homes and How to make them Healthy*, Shirley F. Murphy; *Sanitary Construction of Dwelling-Houses*, H. H. Corfield, M.D.; Buchan or Hellyer on *Plumbing*.

ILLUSTRATED SANITARY PATENTS.

16,542. (1888.) IMPROVEMENTS IN THE MANUFACTURE OF INDIA-RUBBER WATERPROOF GARMENTS. GOODMAN CHARLES MANDLEBERG, HENRY LESSER ROTHBAND, and SAMUEL LAWRENCE MANDLEBERG, Pendleton, Manchester. [6d.]

This invention relates to india-rubber waterproof garments and their manufacture, so as to be free from the natural unpleasant smell which accompanies that class of goods, by the following process:—

A single texture fabric is employed, proofed with, say, about five coats of dough mixture, using, by preference, only those dough mixtures free from what is termed rubber substitutes (such as those made from oils). This proofed fabric is vulcanized or semi-vulcanized by the cold process of vulcanizing, and farina, or suitable sub-

stance, is applied to the proofed surface before, during, or after the process of cold vulcanization.

The garments having been made in the ordinary way, from india-rubber waterproof fabrics manufactured as above explained, they are then suspended in a dry-heated air stove at a temperature about 200° Fah. for about half an hour, or until it is found that the disagreeable odour is driven off.

After the unpleasant natural odour has been expelled, the garments may be kept in the stove while the latter is charged with the vapour of some volatile oil, such as oil of lavender or other scent-giving material, so as to give the garments the desired scent or perfume.

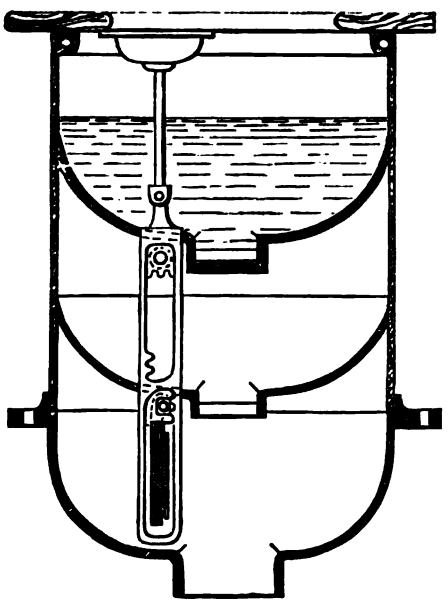
A similar process of manufacture is carried into practice in making odourless garments from double-texture waterproof fabrics produced by any known processes, but without rubber substitutes, such as those made from oil.

In some cases, deodorized naphtha is used instead of ordinary naphtha, and then the stoving temperature need not be so high.

Claim.—The manufacture of odourless india-rubber waterproof garments as described.

17,823. (1888.) IMPROVEMENTS IN WATER-CLOSETS FOR SHIPS AND OTHER USE. JOHN CARTER, 3, Exeter Villas, Whateley Road, Handsworth, Stafford. [8d.]

The object of this invention is for giving an improved water-closet by means of one or two valves, these valves to be opened or shut as required, by a sort of rack and pinion, the one end being attached to or working on the



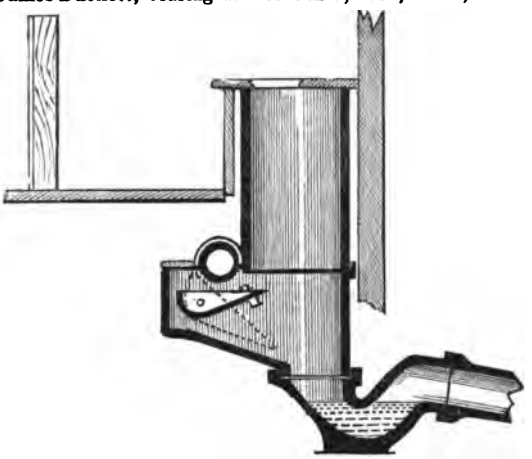
valve shaft, and the other end to the handle or the pull-up.

This apparatus consists, as shown in the figure, of a water-tight case, divided into a top and bottom compartment, and joining the drain just below the bottom compartment. Each compartment has a communication with the drain, and attached to the holes therein are metal or suitable rings for the valves to bear against. From side to side of the above-mentioned case below each compartment is placed a rod or shaft, the ends of which work in suitable bearings at each side of the said case, and protrude a little beyond the outside of the case. Attached to these rods or shafts are the metal plates that constitute the valves covering the holes in the bottoms of the compartments. The rods and valves are actuated and controlled by racks, teeth, and pinions, as shown. By this arrangement, when the handle or pull-up is raised, the top valve is opened, and its contents discharged into the bottom compartment, and upon the handle or pull-up being pushed down into its lowest or former position, the top valve is again closed, previous to the opening of the lower valve. Upon the bottom valve being opened, the contents that were formerly in the top compartment are passed into the drain. By doing so, it will be seen that all escape of any bad smell is prevented, as when the top valve is open the bottom one is shut, so that at all times the communication with the drain and the room where the closet is situated is entirely cut off.

Claim.—Water-closets for ships and other purposes, a top and bottom valve working from shafts, and in combination with a rack and pinions for preventing the escape of smells or gases arising from the discharge pipes, &c., as described in the specification quoted above.

17,991. (1888.) IMPROVEMENTS IN AND RELATING TO WATER-CLOSETS. JAMES DUCKETT AND ALFRED DUCKETT, Mitre Brickworks, Burnley, Lancaster. [6d.]

This invention relates to waste water-closets, similar to those for which letters patent were granted to the said James Duckett, bearing date March 7, 1887, No. 3,431.



The present invention, which we illustrate above, has a two-fold object. The first object is to combine the flushing chamber or tank with the closet pan, or a section or length of such pan, in one piece of earthenware. The pan is open to its full width at its point of connection with the flushing chamber, so that the mouth of the tipper may protrude into the interior of the pan to a point horizontally beyond the vertical face of the pan or extension pipe above. The second object is to construct the outlet from the pan (combining the flushing chamber), circular in plan to adopt it to the socket of an ordinary trap, that the outlet from the latter may be turned in any direction to suit the main drain.

When the water is discharged from the tipper it falls almost vertically with great force direct into the trap, ensuring a thorough displacement of the sediment which may have a tendency to lodge therein.

Inlet junctions are provided to convey waste water to the tipper.

Claim.—The combination and arrangement of chamber and pan, the latter fitting the socket of an ordinary trap, as described.

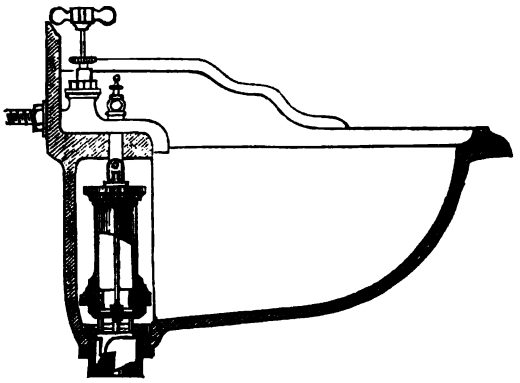
18,866. (1888.) IMPROVEMENTS IN LAVATORY AND OTHER LIKE WASH BASINS AND THEIR FITTINGS. THOMAS WILLIAM TWYFORD. Hanley, Stafford. [8d.]

This invention relates to improvements in standing-wastes, their fittings and means of attachment to lavatory basins, &c.

The above figure represents the improved apparatus. The standing waste, which is detachably connected, consists essentially of an open ended hollow pillar, with a valve, strainer grating, and raising means at its foot or base end, so that by rotating the said standing waste the same is raised or lowered for opening or closing the water

outlet or open socket, through which used water passes away. It will also be observed that the standing waste being of a tubular construction, and fitted on perpendicularly about the aforesaid outlet, the overflow passes over its top and down through it to the outlet.

The contrivance for opening the waste outlet by raising the standing waste consists of a circular incline or spiral



attached to the outlet, and on which rests a projection from the base of the standing waste. Rotary motion is imparted to the standing waste by means of a rod and handle for that purpose, as shown, and when the waste is turned round its projection at the base travels round and up the spiral appertaining to the outlet, thus raising the standing waste and allowing the water to run down the outlet. When the handle is released the standing waste runs down around the spiral again by its own weight, and the outlet is closed.

A strainer grating is provided at the bottom of the standing waste, through which all waste water has to pass to prevent any solid matter getting down the outlet pipe.

The handle and rod which is used to turn the standing waste may or may not be in direct connection with the supply taps of the basin. And the whole apparatus is placed under a projecting hood or shelf at the back of the basin.

The materials preferably used are earthenware for the standing waste and metal for the various fittings.

There are various modifications of this invention and enlargement, which are included in the protection.

Claim.—The hollow standing waste, capable of being raised by rotary motion in connection with the varion fittings, and other parts described in the specification quoted.

14,032. (1889.) AN IMPROVED DISINFECTING, DEODORIZING AND PRESERVING COMPOUND. JOHN GEORGE FLOWER, of 39, Kneeland Street, and DANIEL WILLIAM MACDONALD, 23, Shawmut Street, Boston, U.S. [4d.]

This improved compound in substance, is composed of boracic acid and salicylic acid in combination with permanganate of potash, and either silicate of soda or of potash, and with or without fresh water sand substituted for a portion of the silicate of soda or of potash. The ingredients named are mixed together in about the following proportions:

Boracic acid - - - - - -	10 parts
Salicylic acid - - - - - -	10 ,,
Permanganate of potash - - -	40 ,,
Silicate of soda or potash, or both -	40 ,,

If fresh water sand is used then

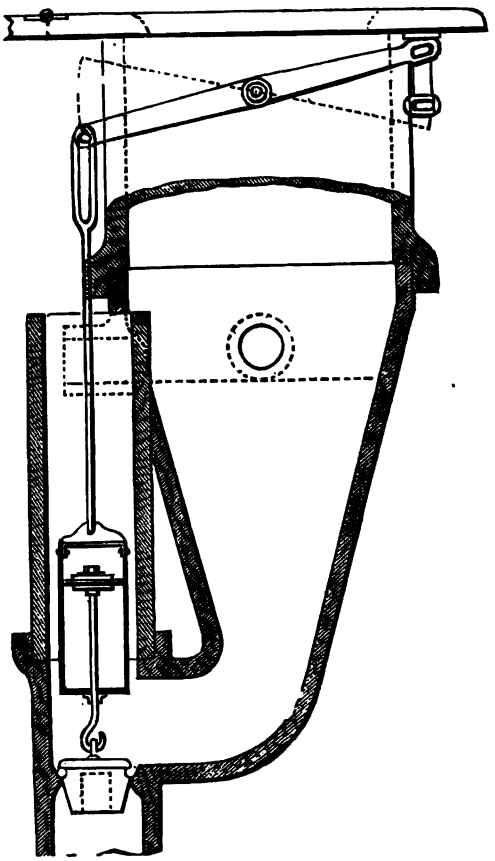
Silicate of soda or of potash or of both - - - - - - - -	30 ,, and
Fresh water sand - - - - -	10 ,,

The compound as stated is a solid, and is suitable for placing in water tanks, bowls, urinals, and other situations where it is desired to charge liquids with the disinfecting and deodorizing elements. The compound is thoroughly disinfecting and deodorizing, and also very serviceable for washing and cleaning painted and varnished surfaces, for hospitals and all other sanitary purposes, and also for the preservation of meat.

Claim.—The compound as described for the purposes specified.

3,178. (1889.) IMPROVEMENTS IN APPARATUS FOR FLUSHING WATER-CLOSETS. JOHN SHARPLES, 3, Monk Street, Accrington. [6d.]

The object of this invention is to provide simple and automatic flushing for water-closets, having in view the disposal and further use of waste water which has already been employed for domestic or other purposes.



As shown in the figure, a rising pipe is provided outside but open to the closet vessel, as is carried above the point of overflow. Within this rising pipe is suspended a movable cylinder, which is attached by a rod and suitable levers to the closet seat. Within the cylinder is an easy fitting piston which is attached in its turn to a valve controlling the waste outlet of the closet. There is a small hole in the bottom of the cylinder through which the liquid in which the cylinder is suspended may pass to or from the space beneath the piston. The rod attached to the upper end of the cylinder has a slot at its upper end where it engages with the lever. This lever is actuated by another lever, which in turn engages with the fixing attached to the closet seat. A weight having sufficient mass to lift the valve and raise the seat is fixed to this second lever. We have not been able, through want of space, to depict this weight and second lever.

The conditions assumed in the figure are that the closet is in use, the outlet valve closed, the vessel full to overflow, the seat depressed, and with it the remote end of the lever, the cylinder, too, having fallen by its own weight through the distance permitted by the slot in the rod. When the closet is out of use, the above-mentioned weight

operates, lifting both the closet seat and the valve; the vessel is immediately emptied, and the valve meanwhile slowly falls to close the outlet in proportion as the liquid gradually escapes from the space beneath the piston within the cylinder.

There are several variations and modifications of this invention, the principal object of which, however, is the automatic flushing of the apparatus by the movement of the hinged closet seat.

Claim.—The combinations or systems of apparatus as described for operating the valves of water-closets when flushed with waste water.

LIST OF APPLICATIONS FOR PATENTS

RELATING TO SANITATION.

FROM NOV. 4, 1889, TO NOV. 30, 1889.

[*This List is specially compiled for the* SANITARY RECORD *by Messrs. Rayner & Cassell, Patent Agents, 37, Chancery Lane, Holborn, from whom all further information relating to Patents may be had on application, gratuitously.*]

November 4.—No. 17,456. CHARLES WILLIAM SHEPHERD, 72, New Market Street, Bradford. An improved water-bottle case or flask.

No. 17, 498. JOSEPH BREEDEN, 7, Staple Inn, Middlesex. Improvements in apparatus for flushing water-closets and urinals, and for other like purposes.

November 5.—No. 17,552. WILLIAM BIRCH, 4, St. Ann's Square, Manchester. Improved apparatus for filtering sewage and other liquids.

No. 17,614. GEORGE ARTHUR GOODSON, 4, South Street, Finsbury, London. Improvements in the manufacture of matrices and apparatus therefor.

November 7.—No. 17,716. ERNEST BOND, Woking Lodge, Woking, Surrey. An adjustable folding bed ventilator.

No. 17,751. JOHN FRANKS, 321, High Holborn, London. Improvements in or applicable to drain pipes, and in the method of laying the same.

November 11.—No. 17,928. WILLIAM DUNDAS SCOTT-MONCRIEF, 86, Newman Street, London. Improvements in or relating to valve water-closets.

November 12.—No. 17,991. GEORGE FREDERICK PRIESTLEY, Commercial Street, Halifax. New or improved apparatus for treating sewage matter.

No. 18,013. ROBERT INGLIS, East Sciennes Street, Edinburgh. improved socket for india-rubber pad, as applied to water-closet seats.

November 13.—No. 18,086. JOHN EMPSON & JOHN HEWITT, trading as Wilkins & Wright & Alma Jones, 13, Temple Street, Birmingham. An improved syphon flushing cistern.

November 14.—No. 18,171. LAMBERT JOHN DOPPING, Hepenstal, Derrycassan, Granard, Longford. An improved seat or sanitary appliances.

No. 18,192. JOHN JONES, 40, Sydney Street, Chelsea. Improvements in stoppers for drains and the like.

No. 18,460. MARK HARGREAVES, 4, Clayton Square, Liverpool. Improvements in disinfectants and antiseptics.

November 19.—No. 18,474. GEORGE EDMUND ARNOLD, Park View House, St. Leonards-on-Sea. Improvements in sanitary flushing apparatus.

No. 18,509. R. G. L. BUEN & JOHN MCDONALD, 33, Chancery Lane, London. Improvements in or connected with pedestal water-closets.

No. 18,512. JOSEPH PRICE, 21, Cockspur Street, London. Improvements in disinfectants and deodorizers.

November 25.—No. 18,862. HENRY SUTCLIFFE, Adelaide Street, Halifax. Improvements in water-closets and apparatus connected therewith.

No. 19,006. OMAR H. JEWELL & IRA H. JEWELL, 45, Southampton Buildings, London. Improvements in and relating to apparatus for the filtration of water.

November 28.—No. 19,016. EDWARD FRANCIS HALL, 36, Linver Road, Hurlingham, Fulham. A filter for commercial purposes.

November 29.—No. 19,167. SAMUEL HENRY ADAMS, Monkbridge, York. Improvements in flushing weirs.

SPECIFICATIONS PUBLISHED.

15,920. LIGHTBODY. Cisterns. 1888. 4d.
18,751. WALLIS & NICHOLS. Cistern ball valves. 1888. 6d.
1,139. STEVENS. Water-closet apparatus. 1889. 6d.
16,541. MANDLEBERG & others. Waterproof garments. 1888. 4d.
18,624. CONNELL & GORDON. Water-closets, &c. 1888. 8d.
18,865. TWYFORD. Water-closets. 1888. 8d.
384. SANDERSON (O'Brien & another). Removing impurities from water in steam boilers. 1889. 6d.
13,693. QUELCH. Water-closet paper seat cover. 1889. 4d.
14,237. THOMPSON (Maraun). Flushing apparatus. 1889. 11d.
18,568. BELOE. Purifying sewage, &c. 1888. 11d.
18,866. TWYFORD. Lavatory, &c., fittings. 1888. 8d.
521. BENNETT. Soil pipes, &c. 1889. 8d.
3,178. SHARPLES. Flushing water-closets. 1889. 6d.
9,244. LESLIE. Filter. 1889. 6d.
17,823. CARTER. Water-closets. 1888. 8d.
18,520. BEARDMORE. Sanitary apparatus. 1888. 6d.
18,581. BEARDMORE. Urinals. 1888. 6d.

The above Specifications may be had from Messrs. Rayner & Cassell, Patent Agents, 37, Chancery Lane, at the prices quoted.

NEW INVENTIONS.

A NEW METHOD OF DISINFECTION.

A NEW apparatus designed for the destruction of disease germs by the action of hot air has been built in the disinfecting station of the Health Department in New York, from designs by Drs. Herman M. Biggs and T. Mitchell Prudden.

The apparatus consists in part of a brick oven, 8 feet long, 6 feet wide, and 6 feet high, with openings large enough to admit bedding and clothing. Inside the brick walls are coils of steam pipes, which are connected with a tubular boiler. A wire netting protects the clothing to be disinfected from contact with the steam pipes. Openings in the top and bottom of the oven lead into large tubes which are covered with felt to prevent the escape of heat, and the tubes join in a circular box containing a fan that can be made to revolve with great rapidity. Air in the oven can be raised to a temperature of 212 degrees, and by means of the tubes and fan it can be kept in rapid motion without loss of heat.

After the oven is filled with infected clothing a constant blast of hot air, sufficient to kill the worst germs, can be sent through it for any desired length of time, without destroying the lightest fabric. It is expected that the rapid circulation of the air will cause the heat to penetrate evenly through the entire mass of fabrics, and that only a brief exposure to the dry heat will be necessary to complete the work of germ-killing. When the tests are made "tell-tale" thermometers will be wrapped up in bundles of cloth in different parts of the oven, and it will be easy to judge by a comparison of records how nearly perfect the apparatus is. The cost of the apparatus was about £350.

REVIEWS.

Chemical and Bacteriological Report on the Atmosphere of twenty-six Buildings in Newcastle-on-Tyne. Prepared for the North-Eastern Sanitary Inspection Association by P. PHILLIPS BEDSON, D.Sc., F.C.S., T. WATSON LOVIBOND, F.I.C., F.C.S., and WALTER D. SEVERN, Ass.Norm.Sch.Sc., Newcastle-on-Tyne.

THE authors of this report subdivide their analytical methods into (1) Chemical and (2) Bacteriological. In the chemical analysis of the air of buildings, they have in all cases made careful determinations of the proportion by volume of carbonic acid gas in the air; because, although it is well known that other expiratory products which accompany the gases exhaled from the lungs of man are far more toxic in their effects than this gas, yet the determination of the quantity of carbonic acid gas is a measure of the total fouling of the air, whilst there are

at present no methods of precision for estimating the other expiratory products.

The standard of purity accepted in the Report is that of Professor De Chaumont, viz. 6 volumes of carbonic acid gas per 10,000 volumes of air, to maintain which it is estimated that 3,000 cubic feet of air per man per hour must be supplied.

Pettenkoffer's method was employed for estimating the proportion of carbonic acid gas in the air. To a measured volume of air a measured volume of Baryta water is added. The carbonic acid gas yields Barium carbonate by combination with a portion of the Barium of the Baryta water, and the quantity of gas thus combined is estimated by titration with oxalic acid of known strength. An attempt was also made to estimate approximately the amount of *organic impurity* in the air by determining the amount of permanganate of potash deoxidized by a known volume of the air.

In the bacteriological examination of the air of buildings, the authors of the Report employed two methods, viz. that of Dr. Hesse, and that of Dr. Percy Frankland.

Hesse's method was employed in places which were comparatively free from draughts, but Frankland's method was preferred where strong air-currents prevailed.

In Hesse's method, a measured volume of air is drawn through a glass tube, sterilized, and half filled with nutrient jelly. The number of organisms is estimated by simply counting the number of colonies which subsequently develop upon the jelly.

In Frankland's method a sterilized glass tube is filled with sterilized glass wool. A measured volume of air having been drawn through this, the glass wool is pushed out by a sterilized wire into a flask containing liquefied nutrient jelly. The jelly, containing the entangled glass fibres, is then solidified over the walls of the flask, and the colonies which subsequently develop are counted.

The results are tabulated in 11 columns, viz.:—

Column 1. Place, time, and general conditions.
,, 2. Date.
,, 3. Temperatures by wet and dry bulbs.
,, 4. Relative humidity of the air.
,, 5. Carbonic acid in parts by volume in 10,000 of air.
,, 6. Organic matter expressed as parts by volume of oxygen required for 1,000,000 volumes of air.
,, 7. Number of bacteria in 10 litres of air.
,, 8. Number of moulds in 10 litres of air.
,, 9. Total of bacteria and moulds in 10 litres of air.
,, 10. Ratio of bacteria to moulds.
,, 11. Special remarks.

As the result of their inquiries, the reporters are convinced of the almost universal need for some improve system of ventilation, and they are of opinion that in very crowded rooms some *mechanical* means of removing foul air and supplying fresh must be resorted to, *i.e.* mechanical, as contrasted with the *natural* means of open windows and doors, &c.

Capacious ventilating shafts conveying well-heated air are recommended, the supply being—

Ample—2,000 to 3,000 cubic feet per head per hour.
Slow—2 feet per second at contact with people.
Regular—Constant supply. Uniform velocity.
Distributed—All over. No stagnant places.
Diffused—Diluting vitiated products.
Through—Fixed direction (not reversible). Inlet to outlet.
Pure—Sources untainted. Above suspicion.
Warm—60 to 65 degrees Fahr. always.

Inadequacy of *outlet* is a very common fault in the ventilation of buildings.

If it be objected that ventilation conducted upon the above principles is expensive, that is an acknowledged fact, but the authors of the Report maintain that the outlay is well invested, since it leads to "much more and much better work from all workers."

Che cosa possa e debba fare il Medico a Vantaggio dell' Umanita (What the Physician can and ought to do for the Welfare of Mankind.) Dr. CARLO RUATA. 1889.

SIR W. JENNER used to commence his lectures on medicine with the dictum that "the first duty of the physician is to *prevent* disease," and Professor Ruata concluded his course on Materia Medica with this eloquent demonstration of the higher, truer, and more real claims of preventive than of curative medicine. Combating the popular notion that the physician has it in his power to repair the human organism as a watchmaker does a watch, he surveys the nature and limits of therapeutic agencies. Old superstitions and traditions have given place to physiological investigations into the actions of drugs on the organs of circulation, secretion, &c.; and so far pharmacology has become an exact science, but we know little or nothing of the *modus operandi* even of such as amyl nitrite, strychnia, digitalis, morphia, &c., which we can and do employ with a clear anticipation of the result to be attained. Our ignorance is even greater in the case of the absolutely empirical, albeit not less certain, employment of quinine and colchicum; but though we can, in countless cases of disease, give, by means of well-selected drugs, the greatest immediate or permanent relief, the symptoms disappearing as if by a charm, we can only assist nature, and nature alone can cure. It must be confessed that though the progress effected of late in diagnosis has been enormous, in therapeutics it has been comparatively insignificant; and while the homœopathist panders to the "watchmaker delusion" of the vulgar, the educated physician is apt to concentrate his attention on diagnosis, and to look on his patient in the light of an interesting scientific problem.

Do what we will and can to assist the cure of disease, no man can honestly say that he has cured a single case of fever or small-pox, and rarely those of other diseases. The achievements of surgery alone can lay claim to any such credit.

But there seems almost no limit to the power of man in the prevention of diseases, especially those of the infectious class, and this thought inspires our author to a vehement denunciation of the violation of every axiom of public health that disgraces his beloved land. He dwells especially on the ravages of diphtheria and enteric fever, and points out how in town after town in England and Germany the latter has disappeared before the introduction of improved methods of sewerage and sanitation. He contrasts the general mortality in the greater towns of the United Kingdom before and since the passing of the Public Health Acts, and shows that the death-rate in the smallest Italian towns is at present higher than that of the most densely peopled of our manufacturing centres, while despite our constant communication with India and the continent, and neglect of quarantine as understood elsewhere, England has for more than thirty years enjoyed an absolute immunity from cholera.

Eleventh Annual Report of the State Board of Health of Connecticut. 1888.

STRENUOUS efforts have been made of late to improve the sanitary conditions of the population and to enforce a more complete registration of births, deaths, and marriages, the imperfection of which has been a scandal to so old-established a community. Assuming the statistics of population and deaths to be even approximately correct, the mean death-rate would appear low, did we not take into account the different constitutions by age of a settled population and one composed largely of immigrants. But the prevalence of malarial diseases, enteric and cerebro-spinal fever, and diphtheria, as well as a local epidemic of cancrum oris, betray a state of things which the reports on sewage disposal and water supply fully confirm. Though most of these diseases are incidental to crowded populations, it is remarkable that malarial affections appear to have been unknown thirty years ago, and until quite recently to have spread to every part of the State with the

increase of population and presumably of cultivation. which one would have expected to have tended to reduce their severity.

The fact is that the gross negligence and filthy conditions prevalent among the rural and semi-rural communities are such that the death-rate in the villages is higher than in the larger towns, though in some of those matters are little better, as *e.g.* at Bridgeport, where the water in the public mains was fouled by the putrifying bodies of fish which had died therein from want of air.

An interesting experiment, which seems to have worked satisfactorily, is described by Mr. Benzenberg, City Engineer of Milwaukee, to wit, the dilution of the foul and sluggish waters of the river flowing through the town with the purer water of a lake driven through a tunnel by means of a huge revolving screw.

There is an elaborate and important paper by Dr. Williston on the flow of rivers and their pollution by factory wastes, and a report of a committee on river pollution and the storage and purification of water, with another on chemical and bacteriological examination of potable waters, proper stress being laid in the last-named on the objection to storage in house cisterns, shown by the enormous increase in the number of bacteria even after a very few days.

An original and humorous suggestion, which, could it be carried out, would certainly be found a powerful incentive to sanitary improvement, is made by one contributor, viz. that the town councils should be compelled to allow every person affected with fever 3 dollars a day while confined to his house, and 25 in the event of death, for funeral expenses, subject to his observing such conditions in regard to isolation, disinfection, &c., as they should require.

The registration statistics show that the greater number of births are those of children of foreign parentage, the birth-rate of the native population being extraordinarily low. But the defective character of these reports may be judged of by the facts that not only are numbers of deaths, births, and marriages unrecorded, but in a large proportion of the births, in some towns nearly all, the names are not given, and in 155 certificates of birth the "physicians" in attendance declared their inability, "from the best information they could obtain," to state the sex of the infants!

Report of Investigations in Fourteen Schools in London to be Presented to the Committee Appointed by the Psychological Section of the British Medical Association. Prepared by FRANCIS WARNER, M.D. London, F.R.C.P., Hon. Secretary to the Committee.

AT the meeting of the British Medical Association at Glasgow in 1888, a motion was carried that a committee be appointed to conduct an investigation as to the average development and condition of brain function among the children in primary schools. What rendered this motion of public interest was the presumed existence of a class of backward children, who fell behind the rest, and could not be brought to pass the standards required by the inspectors of schools, or at least got on so much more slowly than the rest that they were a source of embarrassment to the teachers anxious to earn the grant. It was suggested that special schools should be erected for such backward pupils, hence it was of importance to ascertain what proportion they bore to other children. Supposing there were 5 per cent. of such abnormal children it would be worth while to have special schools for them even in the smaller towns. A scheme of investigation was drawn up, and inquiries were pursued in different places. The Report under review, originally published in the *British Medical Journal*, records what was done in fourteen schools in London by Drs. Hack Tuke, G. E. Shuttleworth, Fletcher Beach, and Francis Warner. On making application to the London School Board that body regretted that they must decline the request of the Committee to be allowed to visit their schools; but why they declined it, and why they regretted declining it, does not appear to dwellers at a distance. Entry, however, was allowed to other London schools not under the domination of the School Board. In all, the Committee examined ten public elementary schools containing 3,931 children, four special schools, one pauper, two industrial, and one deaf and dumb school, containing 1,413 children—5,344 in all. Amongst these children mental dulness was reported in 231 cases, that is, about 4·3 per cent. The nature of the abnormalities of development, nervousness, and low nutrition are carefully tabulated. Obvious eye defects were noted. This report was read by Dr. Warner to the Psychological Section of the British Medical Association, recently held at Leeds, the result being a more animated discussion than is usual with that philosophic body. Dr. Savage sent a separate report, which was also read. In it Dr. Savage showed that he attached much greater importance to the examination of the mental capabilities of the children than to nervous symptoms and cranial abnormalities. Thus, the Committee did not issue a conjoint report, but a new Committee was appointed, who will publish the several reports, including those not already in print, and who will, it is to be hoped, present some definite conclusions.

It has been repeatedly stated that there are day schools for backward or very dull children in different towns in Germany and Norway, distinct from the training schools for idiots and imbeciles in which the pupils sleep in the house. It has been somewhat hastily assumed that this method of meeting the difficulty has been proved to be successful. We are not sure that a sufficiently rigorous examination has been made of these day schools by those who have visited them. Dr. Ireland, one of the speakers at the Psychological section at Leeds expressed his scepticism as to the results, and stated his conviction that such schools in Great Britain would be viewed with pronounced dislike by the parents, without whose co-operation they could scarcely be successful. He thought that the difficulty would be better met by having separate classes for children falling behind, within the larger board schools. The prevailing opinion of those present at the section was clearly unfavourable to the idea of erecting separate schools for feeble-minded or grossly-stupid children. Such children, however, exist, and if all the children are to be forced to learn to read or write, they ought to have some different treatment from the rest. It is to be hoped that the Committee will continue their benevolent labours, and will give the public further information about the nature and causes of mental feebleness, and the proportion of backward children not only in the metropolis, but in the larger and smaller towns of Britain as well as in the village and country schools. It seems to us of moment that the number of short-sighted children should be carefully noticed as well as those who are dull of hearing. Though these deficiencies are often overlooked by the teachers, they have a considerable effect in holding back the scholars unless special care be given to allow for them.

On the motion of Dr. Warner a new Committee was appointed. It was announced that they would publish more extended reports, and they were allowed to apply to Government in the hopes of getting money to assist them in carrying on the inquiry.

Twelfth Annual Report of the State Board of Health of Wisconsin, U.S.A. 1888.

IT is satisfactory to find that of 1,087 local boards of health within the jurisdiction of the State Board, as many as 1,057 made report to the Board during the year, in accordance with the statute in that behalf. A small and decreasing number of townships disregard the requirements of the law, while some others have apparently suffered their health organizations to lapse. The Board continues to lament the lack of any effective system of registration of vital statistics, and two recent instances are quoted, of a character calculated to enlist the interest of the mass of the community, inappreciative, it may be, of the bearing of vital statistics upon sanitation; these

instances place the defects of the existing law in a strong light. In one case a woman, whose husband had died of injuries received in the war, applied for a pension. In the course of the proceedings it became necessary to establish the fact of marriage; but in consequence of the absence of records and of the death of the witnesses of the ceremony, the claim had to be based upon such evidence as could be obtained that, prior to the husband's entry into the army, the existence of marital relations between the parties was accepted by the relatives and friends. While in another case, in which legal proof of marriage was sought for, it was unobtainable in the form required, and the only resource open to the parties was that of having the ceremony repeated in the presence of a sufficient number of witnesses. As illustrating the difficulties of the position, the following extract from the report of the health officer of one of the most important towns in the State, may be given. "I cannot give you statistics of death from any kind of disease. This city, which boasts itself of the number of its inhabitants, which has its national banks, its Young Men's Christian Association, its social clubs, such a city has no system of mortuary records from which statistics can be drawn, and the local board refused to recommend to the common council the adoption of an ordinance requiring certificates of death and a system of burial permits, assigning as a reason that 'it is too much red tape connected with so sacred a thing as death and burial.'" It is reported that, owing to the increasing stringency of the laws regulating the practice of medicine and surgery in other and adjoining States, the number of incompetent practitioners in Wisconsin is largely on the increase; some interesting examples of the communications various of these gentlemen have addressed to the Board are given in the report. One advises that attendants on cases of diphtheria should, as a prophylactic measure, "youse whiskey and sulphur sufficient to slitily move the bowells and avoid the youse of onions entirely." Another liberates his mind as follows: "Diploma or no diploma, graduate or no graduate, we have men in our mitts practise that never saw a medical college very sucsessfull practishners we have men graduates unsucsessfull and dangers men I find that practical knollage is with me"; the sentiment is not novel to readers of the correspondence columns of the medical journals—although the spelling may be.

A very useful summary of the laws relating to the public health in force within the State is incorporated with the report of the Board. From this it appears that every medical man practising within the domain of the Board, who is called in to attend a case of infectious disease, is bound to notify the existence of the same to the local board of health, within forty-eight hours, under a penalty of not less than £1 1s., and not over £5, for each day of default. In the event of there being no medical man in attendance, the duty of notifying devolves upon the householder. Power is given to local boards of health compulsorily to remove patients suffering from infectious diseases to "a separate house," without any question of the patient's being "without proper lodging or accommodation"; or the Board may make provision for the isolation of the patient at home, and "may cause the persons in the neighbourhood to be removed, and may take such other measures as they may deem necessary for the safety of the inhabitants." In a relatively sparsely populated and recently settled country, in which importations of infectious disease into any particular township are likely to be relatively rare, and in which organized isolation hospitals are few and far between, it can well be understood that these powers, in the hands of officers of resource and tact, are calculated to deal simply, effectively, and economically with the emergencies which may arise. An Act passed in 1885 requires that school authorities all over the State shall make provision for the instruction of all the pupils in physiology and hygiene, and that only persons shall be received as certificated teachers who have passed a satisfactory examination in these subjects. As illustrating the independence of action which is conceded to local bodies in the United States, it may be mentioned that even village boards, under the Sanitary Acts, have power to declare what constitutes a nuisance; to direct the location and management of slaughter-houses, and to prevent the use or occupation of such, except as authorized by the local board; they may *order* the owner or occupier of any soap factory, tallow-chandlery, tannery, &c., *to remove* the same, all without appeal to any central board.

The Board is able to report that during the year the State was spared anything like an epidemic prevalence of disease, and the reports received from local boards of health were generally to the effect that the graver forms of infectious disease have of late shown a marked decline, both in the frequency of their occurrence and the severity of their type. Small-pox had been introduced into the State upon five separate occasions during the year, and at four different points. In only one case was there any extension of the disease, and then only to another individual in the same family. In view of the extended prevalence of small-pox in other States, with some of which Wisconsin is in frequent communication, these results must be accepted with satisfaction, and as evidence of the energy of the local boards of health. A considerable prevalence of diphtheria during the year is reported in certain townships, in one of which, "for reasons of economy, at an annual town's meeting, a resolution had been presented and adopted, doing away with a board of health." With respect to another outbreak of the disease, it is related that five weeks before a number of young pigs had sickened and died on the farm on which the disease appeared, from a suffocative disease, during the course of which the animals were often handled by one of the children, a little girl. After the animals died a part of the carcases remained unburied for a considerable time, during which the child referred to, with several other children, was in the habit of playing close by. About a week after the burial of the carcases, diphtheria made its appearance among the children who had played in the neighbourhood, and proved fatal in several instances. Enteric fever was again considerably prevalent in the mining regions in the northern part of the State. The Board very properly remarks that records, such as those actually received, of 18, 20, 28, 40, and 50 cases of typhoid occurring in towns of from 2,000 to 6,000 of a population, argue either neglect on the part of the health officer or flagrant lack of support on the part of the local authority. Measles was more extensively prevalent in 1888 than in any year since 1882.

To the report of the Board are appended a series of papers intended for circulation amongst those officially connected with the sanitation of the State; the subjects dealt with are: The Preventible Causes of Typhoid Fever; The Higher Sphere of Sanitary Science; School Sanitation; Rum Remedies; The Charlatan and His Methods; The Examination of Water; and the volume concludes with a condensed summary of the reports of local officers of health. Altogether the Board appears to be dealing with circumstances widely differing from those which obtain in practical sanitation in this country, after a fashion admirably adapted to meet these altered circumstances.

FRECKLETON-ON-THE-RIBBLE COMPETITIVE SEWERAGE SCHEME—FYLDE UNION.—At the monthly meeting of the Fylde Rural Sanitary Authority, held at Kirkham on December 11, Mr. W. S. Hodgson in the chair, it was resolved, on the recommendation of the Freckleton Parochial Committee, to make application to the Local Government Board for power to carry out the scheme of sewerage for the district of Freckleton, submitted by Mr. William Wrennall, C.E., of Liverpool. The scheme was selected as the best, in an open competition under motto, and accordingly was awarded the first premium. Mr. H. B. Nicholl, C.E., of Birmingham, obtained the second premium, and Messrs. Brierley & Holt, engineers, of Blackburn, the third.

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NOTES ON BOOKS.

Seasonable Publications. (Cassell & Company, Limited.)

We have received from Messrs. Cassell & Co. two publications of widely different characters, both of which have their distinct uses. The first, *Letts's Medical Diary*, is a pocket diary, which will be found especially useful to general practitioners, as in addition to all the usual useful matter contained in Letts's admirable compendium, it is provided with pages for entering houses with residences, midwifery and vaccination engagements, things wanted, things lent (a most useful introduction), accounts rendered and payment requested, names and addresses of patients and engagements under the Factory Act. There are also many tables and hints which will be found useful in every-day practice, and a fair amount of space for engagements and mems.

The second publication sent by Messrs. Cassell is a pretty illustrated souvenir of the *Dead Heart*, now being acted at the Lyceum Theatre. Many of our readers have doubtless taken the pleasant tonic of a visit to this admirable performance, and will be glad to have their recollections of it revived by Messrs. Bernard Partridge, W. Telbin, J. Harker, and Hawes Craven's excellent reproductions of the principal characters and scenes in this interesting drama.

Proceedings of the Society for the Study of Inebriety. No. 22 for November 1889. H. K. Lewis.

THIS is the quarterly issue of the papers and discussions, with other contributions bearing upon the subject, at the meetings of the Society for the Study of Inebriety. Mr. H. Ernest Trestrail treats of the various unhealthful conditions favourable to the development of this disease, and dwells at length on the remarkable increase of juvenile inebriety. Dr. Norman Kerr narrates several cases of excessive and persistent arsenic-taking, but does not admit that there is a true arsenic inebriety such as arises from alcohol, or opium, or chloral. He points out the distinction that these latter forms are a frequent cause of crime and immorality, whereas tea, coffee, tobacco, or arsenic excess does not bring persons before magistrates on criminal charges. A record is given of a resolution passed by the society memorializing the Home Secretary and the Government to use their influence to procure the appointment of a Parliamentary Committee to inquire into the results of the working of the Inebriates' Acts, with a view to amended and improved legislation for the more effectual control and treatment of inebriates. Such amendments in the law would be of much value from a public health point of view, as the vast army of inebriates is an undoubted cause of ill-health and incapacity to work, as well as a standing menace to the public peace. Besides doing this practical legislative work, this society is subserving the health interests of the community by investigating the abnormal conditions which give rise to the protean disease of inebriety.

The Proceedings of the Association of Municipal and Sanitary Engineers and Surveyors. Edited by THOS. COLE, Secretary of the Association. E. & F. N. Spon, 325, Strand, W.C.

THE annual report now before us of the proceedings of the Association of Municipal and Sanitary Engineers for the session of 1888–89 contains, as usual, a good deal of information, the perusal of which will repay those who are interested in works of sewerage and water supply. Works of magnitude are described and discussed in its pages, as well as smaller subjects of a domestic character. Amongst the former are the Liverpool Waterworks, which have been somewhat briefly treated, but their description is worth perusal, as the details given of the celebrated Vyrnwy dam will interest the engineering student.

Mr. Rounthwaite's paper on the Sea-Wall and Promenade at Roker, near Sunderland, with the subsequent discussion upon it, contains much imformation which should prove useful to borough surveyors of watering-places, where improvement works of a similar character may be in contemplation, for it goes carefully into details and shows how such an ornamental improvement may be carried out with economy by utilizing the cheap labour of the district during the winter months, and thus preventing hundreds of men with their families from entering the workhouse.

The paper on the Utilization of Town Refuse by Mr. Bennett, the Borough Surveyor of Southampton, is full of practical hints and information, though some of its contents are open to criticism at the hands of those who really understand what has taken place at Southampton, and who realize the fact that the effluent there, after it has been chemically treated, and before its admission into Southampton Water, has been simply "clarified" and not purified; a good standard of purification being in this instance unnecessary, owing to the wide expanse of sea-water into which the effluent is discharged.

During the early part of the summer a portion of the works of the Manchester Ship Canal was inspected by the members of the Association, by permission of Mr. Leader Williams, the Engineer-in-Chief, and a short paper by the District Secretary, Mr. Platt, is the outcome of their visit. This treatise gives a few leading features connected with the construction of the works, and is somewhat interesting, especially where it describes how vessels on the Bridgewater Canal, which is at a higher level, may be transferred to the Ship Canal, and *vice versâ*.

The paper on Municipal Engineering in Hull, by Mr. A. E. White, Borough Engineer, will prove useful, as it shows what can be effectively done with the sewerage of towns, which are naturally provided with only very flat gradients. It also shows the comparative cost at Hull of granite sets as compared with wood blocks for street paving, and instances in a surprising manner the lasting capabilities of uncreosoted wood.

There is also an interesting paper by the Borough Surveyor of Ryde, Isle of Wight, on the Relation of Local Authorities and their Surveyors to the Improvement of Existing Buildings, which draws attention to the difficulty of satisfactorily dealing with the sanitary arrangements of existing houses when they are found to be faulty. The author suggests a means of framing bye-laws which may be made applicable to existing buildings and still receive the sanction of the Local Government Board. Mr. Newman likewise impresses on borough surveyors the danger of granting to the occupants of houses certificates of health, which are liable to engender a feeling of false security. We quite agree that certificates of health should only be granted after the sanitary work has been thoroughly inspected during actual construction by a properly qualified engineer; whilst their wording should be most carefully attended to, for an occupier by ill-usage and want of knowledge can, with great readiness, quickly convert a healthy house into a most unhealthy one, and still produce the certificate to allay all apprehension on the part of a new tenant or purchaser.

A short paper, by Mr. Lawson, of Southgate, on the Relative Merits of Archer's, Doulton's and Hassel's Patent Joints for Sewer Pipes, brings the Transactions of our Municipal Engineers for the past session to a close. We should add that the sample of the voluntary examination papers to be found at the end of the volume will prove of value to candidates for surveyorships under municipal corporations and urban authorities.

Hints as to the Working of the Infectious Disease (Notification) Act, 1889. By J. SPOTTISWOODE CAMERON, M.D. (Huddersfield: Alfred Jubb; and London: Hamilton, Adams & Co.)

THIS little book may be read with advantage by anyone who wishes to study the operation and results of the compulsory notification of infectious diseases in a large town.

Dr. Cameron speaks with especial authority on this subject, as in his capacity of Medical Officer of Health for the Borough of Huddersfield he has had to work the clauses of two local Acts during the past twelve years. After such lengthened experience, Dr. Cameron is strongly in favour of compulsory notification as a means of enabling a sanitary authority to do its work of checking the spread of infectious disorders. But he emphasises very properly the fact that it is only a means, a useful one, no doubt, but still only a means to an all-important end. He lays great stress also on the importance of the medical officer of health having sound judgment, tact, and considerateness. If he is a fussy official, who, with perhaps little or no practical acquaintance with medical work, without perhaps any personally acquired knowledge of the insidious commencements of those very diseases which have so distinct a facies when seen later on in the wards of an hospital, insists upon an early and definite diagnosis from the medical attendant, he may expect little friendly help from his fellow-practitioners in those doubtful and difficult cases which are too often the origin of an outbreak of infectious disease. In Huddersfield the compulsory system has worked well, and the statistics given in Dr. Cameron's little pamphlet indicate a distinct saving of life as well as the removal of many unwholesome conditions as the result of its operation. The difficulties in working the clause have been almost entirely due to the extra work thrown upon the officers by having so large a mass of disease and its causation to investigate. In Huddersfield no medical man has given any trouble, but, on the contrary, the medical profession appear to have given much information which they are not under any statutory obligation to furnish. Dr. Cameron attaches some importance to the omission, both from the Huddersfield Act and from the general Act of last session, of any provision for the reporting of doubtful cases. Those cases are often the beginnings of serious troubles. Insufficiency of hospital accommodation was also, until recently, another serious impediment in making the most of compulsory notification in Huddersfield. Dr. Cameron has appended to his pamphlet a copy of the general Infectious Disease (Notification) Act of last session, and has thus increased its usefulness.

LAW REPORTS.

HIGH COURT OF JUSTICE, QUEEN'S BENCH DIVISION.

(*Before* LORD JUSTICE FRY *and* MR. JUSTICE MATHEW.)

RAVENSTHORPE LOCAL BOARD *v.* HINCHCLIFFE.

THIS case was stated by the Justices of the Dewsbury petty sessional division of the West Riding of the county of York, and raised questions of great importance, arising out of an information laid by the clerk of the Ravensthorpe Local Board against Walter William Hinchcliffe under the Public Health Act, 1875 (38 & 39 Vict., c. 55), and the Public Health (Buildings in Streets) Act, 1888 (51 & 52 Vict., c. 52, section 3). Section 156 of the Act of 1875 provides:—"It shall not be lawful in any urban district, without the written consent of the urban authority, to bring forward any house or building forming any part of any street, or any part thereof, beyond the front wall of the house or building on either side thereof, nor to build any addition thereto beyond the front of the house or building on either side of the same." Section 3 of the Act of 1888 provides as follows:—

"Section 156 of the Public Health Act, 1875, is, save as hereinafter mentioned, hereby repealed, and in lieu thereof it is hereby enacted that it shall not be lawful in any urban district, without the written consent of the urban authority, to erect or bring forward any house or building in any street, or any part of such house or building, beyond the front main wall of the house or building in any street, or any part of such house or building beyond the front main wall of the house or building on either side thereof in the same street, nor to build any addition to any house or building beyond the front main wall of the house or building on either side of the same. Any person offending against this enactment shall be liable to a penalty not exceeding 40s. for every day during which the offence is continued after written notice in his behalf from the urban authority."

The complainant alleged that on May 7, 1889, Walter W. Hinchcliffe did, without the written consent of the Ravensthorpe Local Board, erect or bring forward a certain house or building in Broomer Street, beyond the front main wall of the house or building on either side thereof in the said street. The following facts were proved:—That Broomer Street, Ravensthorpe, was not repairable by the inhabitants at large, and had buildings on its north side set back 12 feet; that Joseph Burton, the owner of a plot on the south side of the street, submitted to the Local Board a plan for the erection of a dwelling-house, to be built on the south side; that the plan was approved on April 4; that the plan showed the front wall of the building proposed to be erected by him set back 12 feet from the edge of the street, leaving an open space between it and the street; that the respondent, who was the owner of a corner plot on the same side of the street 140 yards from Burton's plot, on March 26, 1889, submitted, through his architect, a plan for the erection of a dwelling-house, showing the building to be set back 6 feet from the edge of the street; that at a meeting of the Board on April 17 the plans of the respondent were disapproved of on the ground that the proposed building-line projected beyond the building-line in the street; that Burton commenced on April 25 laying the foundation of some or all of the outside walls, the excavation having been previously made, and on April 29, the front main wall was about 5 in. above the level of the ground adjoining Broomer Street, but not to the level of the road in Broomer Street; that on April 25 the respondent, without the consent of the Board, commenced to dig the foundations of his proposed house, and on April 29 commenced to build the front wall set back only 6 feet, thus projecting 6 feet beyond the wall of Burton's house, then in the course of construction; that on May 6 the respondent's front wall was 2 feet above the level of the ground, and on that day the Board gave the respondent notice that he was erecting his house, without the written consent of the urban authority, beyond the front main wall of the house or building on either side thereof. The respondent submitted that proper notice of the disapproval of his plans had not been given as required by the urban authorities bye-laws under the Local Government Act, 1858, the bye-laws requiring a fortnight's notice to be given of the intention to build, within which time the Board should approve or disapprove the plans. On the part of the appellant it was contended that Broomer Street was a street within the meaning of the Public Health Act, 1875; that section 3 of the Public Health (Buildings in Streets) Act, 1888, applied to the building erected by the respondent, and that he could not erect the building without the written consent of the Board; that the respondent erected his building beyond the front main wall of the house or building then in course of erection by Joseph Burton; that the notice of the rejection of the respondent's plans was not material to the issue, and, if material, such notice was given in due time. The majority of the magistrates were of opinion that (1) Broomer Street was a street within the meaning of the Public Health Act, 1875; (2) the building in course of erection by Burton was not, at the time when the respondent's building was commenced, a house or building within the meaning of section 3 of the Public Health (Buildings in Streets) Act, 1888; (3) the notice of rejection of the respondent's plans was not material to the issue, and, if material, had been given in due time. The summons was accordingly dismissed. They stated, however, the above case for the opinion of the Court upon the following questions of law:—(1) Whether Broomer Street is a street within the meaning of the Public Health Act, 1875; (2) whether the dwelling-house or building

commenced to be erected by Burton is a dwelling-house or building within the Public Health (Buildings in Streets) Act, 1888, section 3; (3) whether, on the above facts, the respondent had erected a dwelling beyond the main front wall of the house or building on either side within the meaning of section 3; (4) whether the notice of rejection of the respondent's plans was material to the issue, and, if so material, whether such notice ought to have been given within 14 days or one month from the delivery of the respondent's plans and notice.

Mr. Henn Collins, Q.C. (Mr. Lawson Walter with him), for the appellant, argued that he was within the working of section 3 of the Public Health Act, 1888. It was the front main wall of a house. Burton's plan was approved; he could not abandon it and build upon another. If it were the *bonâ fide* line of a house to be built on the line shown on the plan, then the case came within the mischief contemplated by the Act which it was intended to meet. The Board had the power to regulate the projection from buildings. [Lord Justice Fry.—I have great doubt whether five inches of wall is a building within the meaning of the statute.] The point is whether there was a *bonâ fide* intention to build. As to whether it was a street, the Justices had found that it was a street. The houses on the other side were continuous.

Mr. Forbes, Q.C., for the respondent, submitted that the Act of 1888, section 3, was intended to meet a case where there were houses on either side. It did not mean a house 140 yards off. It was taking away a person's property without compensation.

Mr. Justice Mathew: What was the decision that led to the passing of the Act of 1888?

Mr. Henn Collins: Williams *v.* Wallasey Local Board (16 Q.B.D., 718).

Mr. Forbes: It might apply to little more than a country road. Suppose a man bought a piece of ground upon a road over which the public had no rights whatever, and another person bought some land adjoining and built a house, could it be said that he was to regulate the building on the adjoining land? In dealing with the plans the Board had no authority to object to the line until it had been defined. The word "width" in the bye-laws of the local authority meant width of roadway, and not width between the houses on each side of the street. Robinson *v.* Local Board of Barton Eccles (8 App. Cases, 798). It was not a building within the meaning of section 3 of the Public Health Act, 1888.

At the close of the arguments judgment was reserved.

Prosecution of the Medical Officer of Health for Newcastle-upon-Tyne.

At the Rothbury Petty Session, on November 9, before the Rev. A. O. Medd (in the chair), Mr. W. Hawthorn, and Mr. W. A. Watson-Armstrong, Henry Edward Armstrong, Medical Officer of Health for Newcastle-upon-Tyne, was charged "That he on August 12, 1889, at Rothbury, Northumberland, while in charge of Mary Armstrong, his wife, then and there suffering from a dangerous infectious disorder, to wit, scarlet fever, did unlawfully expose the said Mary Armstrong while so suffering, without proper precaution against spreading the said disorder, in a public conveyance, to wit, in a carriage of the North British Railway Company, without previously notifying to the owner, driver, or conductor thereof that the said Mary Armstrong was so suffering, contrary to the statute in that case made and provided. A second summons charged Dr. Armstrong with unlawfully exposing the same person in a public conveyance, a carriage of the North British Railway Company, while she was suffering from scarlatina. In a third summons he was accused of exposing the same person while suffering from scarlet fever, in a 'bus belonging to the County Hotel, Rothbury, without giving the proper notification to the owner, driver, or conductor thereof, and in a fourth summons he was charged with conveying the same person in the same' bus whilst suffering from scarlet fever.

Mr. Parsons (of Messrs. Joel and Parsons, Newcastle) appeared for the prosecuting sanitary authority, and Mr. C. M. Dix (of Messrs. Dix and Warlow, Newcastle) represented the defendant.

Mr. Parsons said he appeared on behalf of the prosecution, instructed by the Guardians of the Rothbury Union, acting as the rural sanitary authority, to prefer a charge against Mr. Henry Edward Armstrong, Medical Officer of Health for Newcastle. The charge was made under the 126th section of the Public Health Act, 1875. Sub-section 2 of that section set forth that any person who, while suffering from a dangerous and infectious disorder, wilfully exposed himself in a street, shop, or conveyance without notifying the same to the owner, driver, or conductor of the same, was liable to prosecution, and anyone in charge of a patient so suffering was similarly liable. The facts were shortly these: Dr. Armstrong and his family had been residing in Rothbury with a Mr Archer, of Coquet House. He came on July 21.

The Clerk: Which information are you going on?

Mr. Parsons: On the scarlatina one. Really the disease that they said Mrs. Armstrong was suffering from was scarlatina. There was no distinction between scarlatina and scarlet fever. Mr. Armstrong, he continued, resided at Mr. Archer's, and on Sunday, August 11, he found that his daughter Christina was suffering from scarlet fever. At eight o'clock in the morning of that day he saw her, at three o'clock in the afternoon he thought it necessary she should be removed, and in consequence of that she was removed to the Hospital for Infectious Diseases at Walker and admitted at six o'clock on that day. The defendant seemed to have accompanied his daughter by road and did not return to Rothbury that day, leaving Mrs. Armstrong at Rothbury. From the books at the hospital it was evident the daughter was suffering from scarlet fever. On the Monday morning Mrs. Armstrong feeling unwell, sent for Dr. Jack about half-past eleven o'clock. Dr. Jack went to attend her and saw Mrs. Armstrong. Mrs. Armstrong asked Dr. Jack if it was advisable that she should be removed, and he replied that she should wait until Mr. Armstrong returned. He did return at half-past three o'clock on the Monday afternoon, and shortly after seeing his wife sent to the County Hotel, and engaged a 'bus for the removal of Mrs. Armstrong. The 'bus was a public vehicle, and it would be proved that no notification was given to the driver or at the hotel that the lady was suffering from this infectious disease. Mrs. Armstrong was taken to the 4.35 train, and taken to Newcastle, arriving at 6.30. The following morning they found from the books at the hospital that Mrs. Armstrong was admitted to the Walker Hospital, and certified as suffering from the disease of scarlatina. She was detained there for 56 days, under the care of Mr. Armstrong himself, who was the medical superintendent of the hospital, and she was then discharged as recovered. At the time Mrs. Armstrong was removed from her lodgings in the conveyance she was suffering from disease—infectious disease—and Mr. Armstrong knew that, or as a medical man ought to have known it, knowing that his daughter had been removed, and he should have taken the precaution to notify to the driver of the 'bus that this lady was suffering from that infectious disease. Had he done so there would have been no offence. For the offence he was liable to a penalty not exceeding £5. He (Mr. Parsons) did not know whatever the answer to the charge could be. If the doctor was going to say that he was not aware of the disease, Dr. Jack would say that Mr. Armstrong must have known from what his wife was suffering—taking into consideration the fact of the daughter having been taken away and Mrs. Armstrong's symptoms.

Mr. Parsons then called

Joseph Robinson Arkle, clerk to the Rothbury Guardians, acting as the Rural Sanitary Authority, who produced the following resolution passed at a meeting of the Board:—"Dr. Richardson moved, and Mr. Mitcheson seconded, and it was resolved, 'That the clerk be instructed to make inquiries into the circumstances under

which Mr. Henry Edward Armstrong, of Newcastle-upon-Tyne, medical officer of health, had removed his wife from Rothbury whilst suffering from a dangerous infectious disorder, and if he ascertained that she had been removed in public conveyances without the proper notices having been given, then to commence legal proceedings against the said Mr. Henry Edward Armstrong for such offence under the Public Health Act, 1875.'"

Dr. John Samuel Jack, who said he was an M.B. practising in Rothbury, was next called, and said he had been in Rothbury for several years. He did not attend Mrs. Armstrong or Miss Armstrong prior to August 12. He was sent for on Monday morning August 12, at half-past ten o'clock, to see Mrs. Armstrong. He was not at home at the time, but went at half-past eleven. He believed he was told as he went to the house that Mr. Armstrong's daughter had been removed.

Witness, continuing, said that when he saw Mrs. Armstrong, she told him that she had not been well for a day or two, having had a severe attack of English cholera, and was still suffering from diarrhœa. That morning, she told him, she commenced to complain of her throat. He examined her throat. The tonsils were not much swollen; they were inflamed. He felt her pulse, and found it weak, but not above normal. He did not take her temperature. That was about all the symptoms he found. He had some conversation with Mrs. Armstrong.

Did Mrs. Armstrong tell you her daughter had been taken away?

Witness: Yes, I believe she did.

Mr. Parsons: And did she tell you what she was suffering from?

Witness: Yes, I believe she did.

What did she say she was suffering from? She did not say positively, but that Mr. Armstrong was afraid it might be scarlet fever.

Mr. Parsons: Had you any other conversation with her?

Witness: She asked me if it would be scarlet fever in her case. Having heard about the scarlet fever case occurring in the house, I examined her more carefully, and I looked for the rash but did not find one. I examined her tongue for the characteristic papillæ and there were none present. I told her that with the exception of the sore throat ——

Witness, continuing, said: She asked me what I thought of the case, and if there was any possibility of it developing into scarlet fever.

Mr. Parsons: What did you say, doctor?

Witness: I said I hoped not. That there was no rash, the tongue did not show the characteristic papillæ, and she was not feverish, but there was the sore throat, and occurring after a case of scarlet fever that was a suspicious point.

Mr. Parsons: Is that one of the symptoms of the disease?

Witness: Yes, but you can't diagnose scarlet fever from a sore throat pure and simple.

Mr. Parsons: Did she ask you about being removed?

Witness: Possibly she did. I really can't remember.

Mr. Parsons: Did you see her again?

Witness: Not that day.

Mr. Parsons: Was the sore throat infectious?

Witness: I cannot tell you. There are some sore throats that are infectious and some are not. You are asking me what it is impossible to answer on oath. This sore throat I could not say whether it was infectious or not. It is impossible to tell from one visit.

Could you have told later in the day?

Witness: Had there been other symptoms of scarlatina I could; had the other symptoms not developed I could not.

Mr. Parsons: Had you any doubt from the symptoms that she was suffering from scarlatina or scarlet fever?

Witness: It was not a case I could make my mind up about.

Mr. Parsons: Did you make up your mind at the time?

Witness: The case was suspicious, no doubt.

Mr. Parsons: Would you have ordered her to be isolated?

Witness: I don't think I did.

Mr. Parsons: Did you prescribe anything?

Witness: I prescribed a gargle.

Mr. Parsons: A gargle used with scarlatina throats?

Witness: Used for inflamed throats — scarlatina throats.

Mr. Parsons: Did you prescribe anything else?

Witness: No; she expected Mr. Armstrong later in the day.

Cross-examined by Mr. Dix: You would feel her pulse and skin? Yes.—And before so much reliance was placed on the thermometer medical men had to go by touch? Yes.—You have had considerable knowledge with and without the thermometer? Yes.—Can you say about what her temperature was? I said it was not quite normal.—The temperature gains greater height in scarlet fever than in any other? Yes, it goes up quickly.—Was she prostrate? Yes, and very weak. Her skin was clammy, and her pulse was weak.—Were her symptoms consistent with what she was complaining of—English cholera or diarrhœa? Yes, fairly so.—Is not a sore throat frequently produced by chill and noxious effluvia? Yes.—Did you hear that Mrs. Armstrong had complained of catching a chill on the Friday by sitting with the window open? Did she tell you that she had felt an unpleasant smell from the premises adjoining? Witness: I don't recollect that.—How soon does the rash appear in scarlet fever cases after the first symptoms of the disease? Generally within 24 hours, rarely beyond 24 hours.—Did Mrs. Armstrong tell you she had been suffering all Sunday and all Saturday? Yes, she did.—Would diarrhœa be more likely to occur in cases where patients caught a chill from some noxious odour? Yes. Diarrhœa is not a usual symptom of scarlet fever.—From your examination could you have certified her to be suffering from scarlet fever? I could not. I want to explain. I suspected it, but would not liked to have certified it. My attention was drawn more to the weakness of her condition than her sore throat.

Mr. Dix: I may take it that but for the weakness of her condition you saw no reason why she should not return home?

Witness: I did not think of that at the time.

Mr. Dix: I believe that scarlet fever is much less frequent in adults than in children?

Witness: Much less frequent.

Mr. Dix: What would you call distinctive features of scarlet fever?

Witness: Fever with rash and sore throat.

Mr. Dix: I suppose you mean high temperature?

Witness: Yes.

Mr. Dix: The only one of these characteristics you found was sore throat?

Witness: Yes.

Mr. Dix: From what you saw of Mrs. Armstrong, might it have cleared up in a day or two?

Witness: Yes, it might simply have cleared up.

Re-examined by Mr. Parsons: Does the rash always appear in the case of scarlatina?

Witness: No.

Mr. Parsons: You have had frequent cases where there was no rash?

Witness: Yes, or very slight.

Mr. Parsons: Therefore it is not always a distinctive feature?

Witness: No.

Mr. Parsons: In the case of a fever patient, does diarrhœa modify the fever?

Witness: Yes.

Mr. Dix then intimated that they admitted the engaging of the County Hotel 'bus, also the letter from Mr. Armstrong to a Newcastle paper, dated September 2, also that no notice was given to the railway officials. He would not admit that Mr. Armstrong was in charge of his wife.

Arthur Bryson was then called, and said he was the driver of the 'bus conveying Mrs. Armstrong to the train. He said she was wrapped up.

Cross-examined by Mr. Dix: No case of scarlet fever or scarlatina had since occurred to any one using the 'bus. Mr. Armstrong walked to the station. The 'bus was not disinfected, as they had no idea the lady was suffering from an infectious disease when she was removed.

Mr. Dix then said he would admit that Mr. Armstrong travelled in the railway carriage with Mrs. Armstrong and her daughter to Newcastle.

Dr. James Hindhaugh, M.D., said he was resident doctor at the Walker Hospital for Infectious Diseases, of which Mr. Armstrong was the medical superintendent. He spoke to the admission of Christina Armstrong and Mrs. M. Armstrong to the hospital, the former on August 11 and the latter on August 13, the one suffering from scarlet fever and the other from scarlatina.

Cross-examined by Mr. Dix: Mr. Armstrong was *president for this year of* the Association of Medical Officers of Health of Great Britain, and had been Medical Officer of Health for Newcastle for sixteen or seventeen years. Witness had been Mr. Armstrong's assistant for fourteen months, and described him as a prudent and careful man —if he erred on one side or the other it was in that of prudence. After Miss Armstrong was taken to the hospital in a cab the conveyance was disinfected by Mr. Armstrong's orders.

Dr. Francis D. Richardson said he was not now in practice, but had the degrees of M.D. and Surgeon. He had been in practice for thirty-five years, and during that time had had considerable experience. The characteristics of scarlet fever were sore throat, rash, and increased temperature. Sore throat was a decided characteristic. In extremely mild cases the sore throat might be very slight, but in cases of this kind the pulse increased in frequency. If he had been called into a house where there had been a scarlet fever patient and found a person suffering from a sore throat he should have thought it a suspicious case indeed, and would have taken proper precautions.

Witness, continuing, said the rash did not appear until the second and sometimes the third day. Diarrhœa would modify the rash.

Cross-examined by Mr. Dix: Witness said he was a member of the Board, and moved the resolution to prosecute Mr. Armstrong.

Mr. Dix: How many years ago did you retire from practice?

Witness: In 1880.

Mr. Dix: You have been out of practice for nine years?

Witness: Yes.

Mr. Dix: Have you given evidence as a medical expert since that?

Witness: I have not.

Mr. Dix: In addition to moving the resolution to prosecute Mr. Armstrong you contributed to the newspaper correspondence?

Witness: I contributed to the Newcastle papers. I considered that the attack Mr. Armstrong made on the sanitary condition of Rothbury was perfectly ridiculous, and the consequence of it was a very great injury to the inhabitants of Rothbury, who live by letting lodgings. Several people left, and many who had taken lodgings gave them up in consequence. He had never seen Mr. Armstrong until that day, and had never heard of his existence until this occurred. It was only as a member of the Board that he had the slightest interest in the matter.

Mr. Dix: Had you personal knowledge of the health or disease of Rothbury?

Witness: I have official knowledge of the death-rate.

Mr. Dix: Had you personal knowledge other than the death-rate of the health of Rothbury?

Witness: No.

Mr. Dix: Will you admit that Dr. Jack is likely to know more about the health of Rothbury than yourself?

Witness: There is no doubt about it.

Mr. Dix: Are not the symptoms of sore throat combined with diarrhœa consistent with a person having caught a chill or suffering from some noxious effluvia?

Witness: Oh, quite.

Mr. Dix: You have heard Dr. Jack give his evidence this morning, and from anything he has said do you see any symptom of scarlet fever but sore throat when he visited her?

Witness: No.

Mr. Dix: Would any medical practitioner be justified in certifying any person suffering from a sore throat, without higher temperature, to be suffering from scarlatina?

Witness: I don't think any medical practitioner would certify in one way or another.

Mr. Dix: I ask you whether they would be justified in doing so.

Witness: In a scarlet fever house, certainly.

Mr. Dix: That is your opinion?

Witness: That is my opinion.

Mr. Dix: Although there are other reasons to account for the sore throat?

Witness: If there were other reasons to account for the sore throat, that would settle the matter.

Mr. Dix: What do you call a scarlet fever pulse?

Witness: Increased frequency of pulse I call a scarlet fever pulse.

Mr. Dix: Do not pulses in different people vary?

Witness: No doubt of it.

Mr. Dix: Do you agree with Dr. Jack that the rash appears within 24 hours?

Witness: The rash appears on the second or third day.

Mr. Dix: Have you ever yourself been more than 48 hours before you could diagnose a case?

Witness: It depends upon the case.

Mr. Dix: Sore throat occurring in a scarlet fever house is sufficient evidence to you of scarlet fever?

Witness: Yes.

Mr. Dix: Did you ever find a case of scarlet fever certified to be a case of scarlet fever without high temperature?

Witness: Oh, yes.

Mr. Dix: You don't know that among medical men 48 hours is practically recognized as the outside period that fever will show itself after the first symptoms?

Witness: No, and I don't believe it.

This concluded the case for the prosecution.

Mr. Dix, for the defence, said that the onus in that case lay with the prosecution to satisfy the Bench in that preliminary inquiry as to the facts stated in the charge. What were the facts alleged against Mr. Armstrong, and which constituted the case against him? They were that on Monday 12, Mrs. Armstrong was made to appear as suffering from scarlet fever, and he should like the Bench to bear in mind that point. Secondly, that she was at that time infectious. The third was that she was in charge of Mr. Armstrong; and, fourthly, there was the obligation on his part to notify to the driver of the 'bus and the railway carriage that she was suffering from an infectious disorder—scarlet fever; and, fifthly, that what he had done in exposing her in these conveyances he had done wilfully. With regard to that their clerk would guide them, but it must be proved that the defendant knew that the person was suffering from scarlet fever. Exposure was one thing. He might go to a house and induce a patient to make the best of his way home with him in a 'bus, cab, or railway train, but unless he knew, or ought to have known, although that person might be suffering from an infectious disease, of such disease, there was a perfect answer to the charge. Wilful exposure would imply a knowledge that Mr. Armstrong was aware on the 12th that his wife was suffering from scarlet fever and gross culpability on his part in removing her. What were the characteristics of scarlet fever? Each fever was marked by distinct symptoms. Scarlet, "rash," fever, "high temperature,"

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the word explained itself. The general symptom was sore throat, and high temperature by itself was not scarlet fever. Even Dr. Richardson himself said that rash by itself was not scarlet fever. Medical men required to see the three symptoms marked rash, high temperature, and sore throat, and in the absence of any one, much more in the absence of any two, no practitioner would be justified in saying that any person at that time was suffering from scarlet fever. And on the Monday, that was the time they had to consider the condition of Mrs. Armstrong in the light of subsequent events, what were her symptoms and what was she suffering from? Their Worships had heard that on the Friday, which was a very wet, disagreeable day in Rothbury, she had been sitting at an open window and caught a chill, suffered in consequence, and Mrs. Armstrong got a sore throat, which she was subject to. That was on Friday. Dr. Jack—and he asked them to rely with regard to time more upon his knowledge than upon that of Dr. Richardson—Dr. Jack, not as his witness, but as the chief witness on whom the prosecution relied, had said that it was usual for the rash in scarlet fever cases to appear in 24 hours. That being so there was the Friday night, sore throat—24 hours afterwards Saturday. Suffering on Saturday from symptoms of diarrhœa, symptoms not of scarlet fever but of inhaling noxious effluvia. After dealing with the discovery of scarlet fever in his daughter by Mr. Armstrong, her subsequent removal to Walker Hospital, and the careful and prudent way in which this was carried out by Mr. Armstrong, Mr. Dix asked was there any reason why Mr. Armstrong should make a difference with regard to his wife than his daughter. Mr. Dix then reviewed Dr. Jack's evidence. He said Dr. Jack was the only witness which the prosecution relied on. He was the only man relied upon by the prosecution to satisfy their Worships that Mrs. Armstrong was suffering from scarlet fever on the 12th. Had he satisfied them? Dr. Jack had said that he saw nothing about Mrs. Armstrong to justify him in diagnosing the case as one of scarlet fever. What did he find? Sore throat with symptoms of English cholera, but he failed to find the essentials of scarlet fever—increased temperature and rash. Scarlet fever could never be scarlet fever unless it contained the symptoms of scarlet fever. Mr. Dix next pointed out that Mrs. Armstrong was accompanied in the railway carriage to Newcastle by her little daughter, and was met at Newcastle station by friends, and contended that if Mr. Armstrong had suspected his wife of having scarlet fever he would hardly have allowed her to associate with her child and friends. He contended that he did not want to say too much, but it was a cruel prosecution, and it was not difficult to see the origin of it. He had read two paragraphs from two letters. They were both admitted to be written by Mr. Richardson, who was the prosecutor. Mr. Dix said he had brought witnesses there; he had eminent men there, and if he had called all those who had volunteered their services, even from London, he should have filled the Court, but he thought he would not find it necessary, and had not done so. He also quoted the case of the Wells Local Board against Bishop with reference to "being in charge" of a patient.

The Bench retired, and after a short deliberation returned to Court, and

The Chairman said: The Bench, after fully considering this case, have come to the unanimous conclusion that the medical evidence is insufficient to maintain a conviction.

Mr. Parsons: Very well, Sir.

Mr. Dix afterwards applied for costs, but

The Chairman said the Bench had already considered that matter, and had decided that each side should pay their own.

Two deaths from typhoid fever have, within a comparatively short period, occurred at the Royal Naval College, Portsmouth. It is to be hoped that a searching inquiry into its sanitary condition will no longer be delayed.

POLICE COURT CASES.

FOOD AND DRUGS ACT (1875).

An Equitable Decision.

At the Guildhall, before Mr. Alderman Faudel Phillips, the Aërated Bread Company (Limited) were summoned for having on October 30, at No 6, Barbican, unlawfully sold three glasses of milk which was not of the nature and quality demanded by complainant. Mr. Poland, Q.C., represented the company; Mr. Vickery appeared for the Commissioners of Sewers. Arthur Reginal Hills, inspector for the City under the Food and Drugs Act, said that on October 30 last he went into a shop belonging to the defendant company at No. 6, Barbican, where he was served by Elizabeth Portsmouth with three glasses of milk, for which he paid 4½d. He emptied the contents of the three glasses into a clean can. He then told Elizabeth Portsmouth that it was intended for the public analyst, at the same time offering to divide the milk. The offer was accepted. He divided it into three separate parts, which he sealed. One he left at the shop in Barbican, one he sent to Dr. W. Sedgwick Saunders, the public analyst; the third he now produced. Mr. Vickery put in the certificate of Dr. Saunders, which stated that the "milk contained 25 per cent. of added water." Mr. Poland said the Aërated Bread Company not only traded as bakers, but supplied the public with milk, coffee, and other like refreshments, and it was the very essence of the management that nothing but the purest articles were sold. To insure the pureness of milk, contracts had been entered into with dairymen in the country. Unfortunately, however, there had been at least one dishonest person in the employ of the company, and the police had been set to watch the persons who had the carriage of the milk from the Great Western Railway station to the City. A carman by the name of Softly had been charged with stealing milk, and Wiltshire, another carman, had been charged with receiving the same, well knowing it to have been stolen. These persons were committed by Mr. Cooke for trial at the Middlesex Sessions, and Softly, who was in the service of the Aërated Bread Company, was sentenced to six months', and Wiltshire to nine months', each with hard labour. On November 5 it was shown that Softly disposed of some milk to Wiltshire, and to make up the deficiency had added water to the churns in his possession. Mr. Cooke, who first had the case before him, expressed an opinion that the milk was tampered with in the City. Since these men were apprehended the milk had been found pure. He (Mr. Poland) contended that this was an exceptional case. The Aërated Bread Company could not possibly avoid such a thing. Of course he did not dispute the facts, but what he did urge was that the company had ever been most eager to provide pure milk, but that no amount of supervision could prevent such a state of things as had been disclosed. The Alderman.—I have quite made up my mind. No doubt by law the company is responsible for the acts of the servants, but after the very lucid explanation which has been made the equity of the case will be met by the company paying the costs. The summons, therefore, is dismissed. The Commissioners, however, had done what was their duty.

Milk Adulteration.

At Leeds Town Hall Dec. 5, before Mr. Bruce the stipendiary magistrate, William Lawton, farmer, Rothwell Haigh, was summoned at the instance of Inspector Wi[illegible] for having sold milk which contained 16 per cent. of a[dded] water, in Low Road, Hunslet, on Nov. 5. The T[own] Clerk (Sir George Morrison), who prosecuted, said he did not allege that the defendant, who filled responsible pu[blic] positions, knew what had been done by his age[nts]. At the same time, he was responsible for what was d[one]. Mr. Bairstow, barrister, defended, and stated that the defendant bought the milk in question from another [per]son at Rothwell Haigh. It was being distributed by

son and one of his servants. So far as Mr. Lawton knew, no water had been put into the milk; and the defendant's son and the servant, who were called, stated that they had no knowledge of water having been added. During the hearing of the case, a question arose as to whether Inspector Walker, in his examination-in-chief, had stated that he divided the sample of milk he took in the presence of the defendant's son, and notified that it was to be analyzed by the public analyst. Mr. Bairstow contended that he did not. Mr. Walker was recalled, and stated that he asked the defendant's son to see him separate the milk, and informed him that it was for analysis. Mr. Bairstow commented on the fact that this had only come out when the inspector was recalled. He then read the 14th section of the Food and Drugs Act, which runs as follows:—"The person purchasing any article with the intention of submitting the same for analysis shall, after the purchase has been completed, forthwith notify the seller, or his agent selling the article, his intention to have the same analyzed by the public analyst, and shall offer to divide the article into three parts then and there." He urged that Mr. Walker did not forthwith notify the seller's agent of his intention to have it analyzed, and did not offer to divide the article into three parts. His Worship said the case was one of importance. It was certainly the fact that in his evidence-in-chief, Inspector Walker did not mention that he had told the lad that he was going to have the milk analyzed. It was not at all unlikely for a man so accustomed to deal with these cases to miss a part of what was technical proof without thinking of it. Looking at the Act of Parliament, it was desirable that the whole thing should be done in the actual presence of the person who was to be charged. That was not done in this case, and on that ground he should dismiss the summons. The Town Clerk asked his Worship to state a case. Mr. Bruce said he would consider the matter.

MARGARINE ACT (1888).

At Stockton, 16 shopkeepers were charged with selling margarine without having a paper marked "margarine" in letters of not less than a quarter of an inch square, the proceedings being instituted by the corporation, for whom Mr. Pearson, inspector under the Food and Drugs Act, appeared. A fine of 10s. and costs was imposed in each case, defendants not having previously been charged before the Bench.

PUBLIC HEALTH ACT (1875).

Exposing Diseased Meat for Sale.

At the Knaresborough Petty Sessions, on November 20, before Richard Ellis, Esq. (Chairman), J. D. Dent, A. S. Lawson, and A. S. Myrtle, R. Paver Crow, and H. Williams, Esqs., John Johnson, farmer and butcher, Scotton, near Knaresborough, was charged by William Gray, Inspector of Nuisances to the Knaresborough Union R.S.A., under the 117th Section of the Public Health Act, with exposing unsound meat for sale, the penalty for which he was liable being £20.

On behalf of the prosecution, Mr. F. Barber asked the Bench to impose such a penalty as would make the case an example for others not to commit the offence, and so that the public health should not be endangered by such offence being committed. Mr. A. W. Gilling defended.

Mr. Gray stated that on November 14 he visited a slaughter-house belonging to the defendant, where he found the carcase of a beast which he was not satisfied about. The carcase was prepared in the ordinary way, ready for sale, and appeared to have been skilfully done, it being divided and hung up, and the fore-quarters sheeted. The premises where the carcase was found had been used for years as a slaughter-house. The carcase was not a healthy one in his opinion, that it was soft and flabby, and gave off a very sickly smell. As he was leaving the premises, he met the defendant, who said it was a beast that they had killed on Sunday morning that had a stoppage in the bowels; he also said that he was going to salt it for his own family, and did not intend to offer it for sale. The same day he caused the carcase to be carried before a magistrate, who made an order for it to be destroyed.

Cross-examined: The fore-quarters were particularly affected, but, as for the feet, he did not see them. The lungs were not there, and the defendant said that he had given them to the dogs. The defendant admitted that the animal was killed on the previous Sunday. The reason why the defendant would keep the carcase so long was probably that there was only a small sale in the village until the end of the week. Could not give any reason why the beast was not killed later in the week. The defendant also gave another statement to the effect that he was going to bury it.

Dr. Cautley, medical officer of health, stated that on the above date he saw the carcase of the beast referred to. He corroborated the inspector's evidence with regard to the manner in which the carcase was prepared for sale, and considered it unfit for human food. The carcase had a sickly smell, and was quite soft. It appeared to have had some inflammation of the lungs. The defendant told him (witness) that the beast had been amiss all summer. He might say that the internal organs were not there.

T. C. Toope, veterinary surgeon, Knaresborough, was of opinion that the animal was attacked with some febrile disease, probably of the lungs. Could not say exactly what the disease was. The carcase was unfit for human food, and gave off a faint smell; he asked for the lungs and internal parts, but he could not obtain them.

This closed the case for the prosecution, and for the defence

Mr. Gilling contended that the defendant was not a butcher, and the description on the summons was wrong. He contended that there had been no intention whatever on the part of the defendant to sell the carcase of the beast which was found in his slaughter-house. The animal was killed on the Sunday, and it had been kept until the Thursday, so that the inspector or anybody else could see it. Besides, the defendant had some doubts as to whether the meat was diseased or not. In conclusion, he remarked that defendant had never been charged with a similar offence before, and he asked them to give him the benefit of the doubt which there was in the matter.

The Chairman, on behalf of the Bench, said they were convinced that the case against the defendant was clearly made out, and that he had intended it for sale. He would be fined in the mitigated penalty of £5, and the costs would amount to £4 11s. The Chairman remarked that it was a very dangerous thing to expose unsound meat for sale as the defendant had done.

Bad Meat Cases.

At Stockton Police Court, before Messrs. William Benington and P. Dennes, William Waller, butcher, the Shambles, was charged with exposing unsound beef for sale, and with obstructing Mr. John Pearson, sanitary inspector, whilst he was in the performance of his duty. Mr. Malcolm defended. On Dec. 7, Mr. Pearson visited the Stork and Castle Inn Yard slaughter-house, and there found a beast belonging to the defendant in course of being dressed by a slaughterman named Callendar. The carcase was very emaciated, and the animal had suffered from extensive tubercular disease. It was condemned by Dr. Clegg, borough medical officer, and Mr. T. Elliott, veterinary surgeon, as being totally unfit for human food. The inspector went to seek a cart to convey the carcase to some place for destruction, and during his absence attempts were made to destroy the signs of disease, a portion of the lungs being concealed in the blood-pit. When the inspector returned, and was about to take possession of the carcase, the defendant threatened to fell him with a stick. Mr. Malcolm said the defendant gave a fair price for the animal, and it appeared to be healthy. He argued also that tuberculosis did not necessarily make an animal unfit for human consumption. Superintendent Bell said the defendant was convicted of a similar offence

in 1880, and was fined £2, including costs. The Bench now fined him £10 and £2 6s. costs for having unsound beef in his possession, or two months' imprisonment in default of payment; and for obstructing the inspector they fined him £1 and 18s. costs, or a month.

SEPARATE DRAINAGE.

Alfred Heaver, a builder, of St. John's Road, Clapham Junction, appeared to answer a summons charging him with constructing a drain to a house in Rosebery Road, Fulham, contrary to the direction of the Vestry. Mr. Blanco White appeared to support the summons, and Mr. Lankester for the defendant. In opening the case, Mr. White said a pipe was passed under the party wall connecting the drain in the adjoining house. Notice was given to the defendant that the work would not be passed, but instead of any alteration being made, the drain was covered over, thereby constituting a second offence. The directions of the Vestry were that a drain should not be covered in until it had been inspected and properly passed. The surveyor had an interview with the defendant and pressed upon him to put the drain in proper order. The defendant then said if the proceedings were withdrawn he would do the work, otherwise he would not. When he found that he was incurring certain penalties the matter was put right. Mr. White pressed for a conviction, urging that the defendant ought not to escape the penalty because the works had been construed. Mr. Worrington, the surveyor, gave evidence to bear out the opening statement. Mr. Curtis-Bennett looked at the plans approved by the Vestry, and said they represented the drainage of two houses into one drain. Mr. Worrington pointed out that the junction of the drains of the two houses was outside the boundary wall. Practically there was separate drainage to each house. Mr. Curtis-Bennett said the regulations required separate drainage to each house. What was the use of having regulations if they were not complied with? In the event of a stoppage in the drain two houses would become blocked. Other evidence having been given, Mr. Lankester submitted that a technical offence only had been committed. Mr. Curtis-Bennett, in reviewing the evidence, dwelt upon the fact that there had been a departure in the works by the juncture being made in the precincts of the premises where the Vestry had no power of access. He said it was most important for the well-being of the metropolis that every house should have direct communication into the sewers, and so long as he presided at that Court he was determined to have the law carried out strictly. He did not think that a technical offence only had been committed, and fined the defendant £10.

WORKING OF THE NOTIFICATION OF DISEASES ACT.

At Dalston, Peter Benz, a working baker, living in Oldfield Road, Stoke Newington, was summoned to show cause why he should not contribute towards the cost of Clara Benz, his daughter, at present an inmate of the Eastern Fever Hospital. Mr. Alfred Rusby, collector to the guardians, supported the summons, and the defendant was represented by his wife. It appeared that the child was seized with fever in October last, and removed to the hospital against the parents' wish.

Mr. Corser: The child having been taken away without the consent of the parents, can the guardians call upon them for support?

Mr. Rusby: The Notification of Diseases Act recently passed, gives the guardians power to recoup themselves. The guardians thought 1s. 6d. a week for the girl would be a fair amount.

Mrs. Benz: My husband has 24s. a week.

Mr. Corser said the child had been taken away for the public good to prevent infection, and he thought the public ought to pay for it.

Mr. Rusby said the child cost the parish 7s. a week, and would cost more than 1s. 6d. to be kept at home.

Mr. Corser thought the matter hard on poor people, but as he had no alternative than to make an order, it it would be for 6d. a week, and no costs would be granted.

PARLIAMENTARY PAPERS ON SANITARY SUBJECTS PUBLISHED SINCE NOVEMBER 15, 1889.

(To be had of Messrs. P. S. King & Son, 5, *King Street, Westminster, S.W.)*

Enteric Fever.—Dr. Page's Report to the Local Government Board upon an Epidemic of Enteric Fever in the Northern Division of the Houghton-le-Spring Rural Sanitary District, County Durham (No. 47) 6d.

Local Government Board.—Eighteenth Annual Report of the Local Government Board, 1888–89. 3s. 6d.

The Local Government Act, 1888, and County Councils—Relief of the Poor and the Poor Rate—Public Health and Local Administration—Adulteration of Food, &c.—Local Taxation—Valuation—Circulars issued by the Local Government Board during the Year—Reports of Inspectors on Pauperism and Distress, Education of Pauper Children, Boarding-out of Pauper Children, Emigration of Pauper Children, on Work under the Canal Boats Acts, and on Metropolitan Water Supply.

Public Health, Scotland.—Forty-fourth Annual Report of the Board of Supervision, with Appendices, 1888–89. 8vo. ..... 1s. 3d.

CORRESPONDENCE.

Audi alteram partem.

[*All communications must bear the signature of the writers, though not necessarily for publication.*]

INSPECTORS OF NUISANCES AND THEIR MODE OF APPOINTMENT.

THE ways of the Local Government Board are truly mysterious. If, however, in the majority of cases they were efficient, public bodies would be disposed to speak with respect of their action and look upon the Board as a veritable pater-familias; but is the Board not looked upon much too often by local authorities in a derisive manner: when the Board should be strong it is weak, and when early decision is required it is still unable, Morpheus-like, to shake off its lethargy and hereditary maundering.

The Local Government Board should be, and doubtless is, above parties, and it should instil this principle into all bodies under it. But how often is its action the reverse? Take the mode of appointment and reappointment of inspectors of nuisances, and we shall see that its action is in an indirect manner most unfortunate.

In a recent number of the SANITARY RECORD you gave an instance of this, where three combined authorities wished to reappoint their inspector for three years instead of one year as heretofore. But when the notice of reappointment was sent up to the Local Government Board it meekly said that it could not sanction the reappointment for a longer period than one year, as that was the term for which the inspector was originally appointed. So that if the inspector had been originally appointed for a fortnight then the Local Government Board would not, in the height of its weakness, sanction his reappointment for a longer period than a fortnight! Does it not appear that the Local Government Board, instead of making inspectors free from the machinations of members of authorities, under whom they are engaged and with whom they may have fallen foul in the conscientious discharge of their duties, make them as directly subject to these offended members as possible?

I would further instance this in the requirement of the Local Government Board that *inspectors must be appointed for a definite period*, and this, in the majority of cases, is only for one year. Then, where the inspector is appointed, as frequently happens, by two or more combined authorities, he has first of all to go through the ordeal of appointment by the Joint Committee, then again by each of the several authorities in turn: and when he is appointed by three authorities, then the farce is enacted by four authorities every year.

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The result of all this is that if the inspector has been conscientious and done his duty honestly and fearlessly, he has brought to light the fact that some member or members are owners of some unsanitary dwellings, and so these delinquent members have a fine opportunity for avengement; throw mud at him as freely as possible, or more, secure his dismissal. Is not all this a most disagreeable ordeal, and how many inspectors are there who rise above the temptation to wink at the malpractices of members, rather than submit to the loss of their positions; or if it does not reach this point, it does to the formation of cliques against him and insult at the meetings.

For my own part I made it a rule years ago to act regardless of fear or favour, and to tell members that it was their duty to set an example to others in having their property free from sanitary defects. This has acted very beneficially. Of course, in a few cases their dignity and pockets have been wounded; but the gain in influence and respect has been great.

I have, however, knowledge of many inspectors, and it is the rule rather than the exception, that they dare not act impartially to members and non-members alike through fear of losing their office.

Now there is no officer of a local authority who has to come more in conflict with its members than the inspector of nuisances, and yet to the discredit of the Local Government Board there is *no other officer whose tenure is so uncertain as his.* If the local inspectors fail sometimes in carrying out their duties equitably and firmly the blame must be laid to the doors of the Local Government Board, whose antiquated and effete precedents are inexplicable and really absurd.

One word more, the title "inspector of nuisances" is a most unfortunate one; it is also very inappropriate and a misnomer, and the sooner a more sensible and euphonious name is substituted for the practical health officer the better it will be for the status of the body.

These are matters which can be remedied: but how? Let the Association of Public Sanitary Inspectors, which is now a large and united body, include them in their programme; work heartily for a redress of their grievances, and the result may be confidently anticipated.

I am,

Yours, &c.,

MEM. SAN. INST.

"UMBRAGEOUS HAM."

IN Thomson's *Seasons*, a work not much known to the readers of *King Solomon's Mines*, or *Dr. Jekyll and Mr. Hyde*, but one which enjoyed popularity in its day, the poet, speaking of a locality which lies within easy reach of Twickenham and Richmond, invokes "the friendly gloom that hides umbrageous Ham."

Whatever may have been the nature of the gloom that hid Ham in Thomson's days, this district revels in a gloom now which is by no means friendly in character either to man or beast condemned to live within its borders.

The Mansion House Council on the Dwellings of the People does not concern itself as a rule with extra metropolitan parishes, having more than enough to do with its limited means in stirring up local authorities in the metropolis itself. We have, however, been appealed to so frequently for aid in bringing to light the insanitary conditions of Ham that we consented last August to make a special survey of this locality. The particular reason for our yielding to the importunities of our friends in the neighbourhood was that scarlet fever, typhoid fever, and diphtheria had been pretty plentiful in the village the previous summer (ending fatally in some cases), and that they had reappeared at the beginning of this summer.

A fortnight's close inspection revealed the fact that there is practically no system of drainage in the place. Out of a hundred cottages visited not one was furnished with a water supply to the water closets. A great many of the cisterns for drinking water had no covers, and cesspools, the only method for removing night soil, were dangerously close to the cottages. In some cases they were not more than three feet away. Worst of all these cesspools were apparently emptied, in many cases, only after a lapse of years, and in some instances it is doubtful whether they are ever emptied at all. Many of the old cottages obtain their water from wells surrounded by these same cesspools, and the wonder is, not that infectious diseases have ever found a place, but that they have ever been absent from Ham. In one place the boards of the water-closet were wide apart, and the stench arising from the deposits beneath the floor were horribly offensive. Dustbins are conspicuous by their absence. This state of things will appear incredible to many who have been accustomed to picture rural innocence and bliss as prevailing at "umbrageous Ham."

It will excite indignation when it is known that the attention of the local sanitary authority has been frequently called to this state of things without any attempt whatever being made to remedy them. The Local Board of Health (!) consists of ten members, with the vicar as chairman. Their officers are a clerk, an inspector, and a medical officer of health, who no doubt holds a similar appointment in adjacent parishes. This official receives £10 10s. a year as salary! The inspector is collector, surveyor, and inspector, is a son of a member of the board, and is himself a builder and small property owner. It is an expensive process to set a Government inspector to work, and for so small a place this surely should be unnecessary. I appeal to you, therefore, to lend your aid in evoking such an amount of feeling as shall arouse this Board of Health to a sense of its duties. Failing this, it will only remain for this council, or for some public-spirited inhabitants of the district, to appeal to the Local Government Board to exercise their powers of control over a board which possesses so little sense of its responsibilities.

JOHN HAMER,
Honorary Secretary of the Mansion House Council on the Dwellings of the People.

Nov. 20, 1889.

LABELLING ARTICLES OF FOOD.

IN the Margarine Act, and in the more recent Sale of Horse-flesh Act, the legislature has directed that the seller shall, by label conspicuously displayed, correctly describe the article sold. It is much to be desired that this principle should be extended to other articles of food, and that all parcels or vessels in or from which such articles are sold or exposed for sale should bear a conspicuous label correctly describing the contents. The following instance, many similar to which will readily occur to those of your readers having practical acquaintance with the subject, will show the need for such an extension of the law. I apply for a sample of milk to a milkman who is delivering at his customers' doors. He prepares to supply me from a special can which he carries for the purpose. I refuse this, and desire to be supplied from the can I saw him use. He thereupon produces a written slip declaring that that particular can contains milk and water, and although he admits to me that he has not informed his customers of that fact, I am helpless. Such fraud would be prevented and the carrying out of the intention of the legislature greatly facilitated if "labelling" were compulsory.

It is to be hoped that some of your readers who have the opportunity may take steps to secure this needful extension of the law.

W. W. WEST.

Walthamstow, Nov. 27, 1889.

ROYAL COLLEGE OF SURGEONS IN IRELAND.—Mr. James Harry Poland, M.R.C.S. and L.S.A.Lond., Surgeon Superintendent Queensland Emigration Service, having passed the necessary examination, has been granted the Diploma in Public Health of the College.

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DWELLINGS OF THE LABOURING CLASSES.

THE following circular letter has been addressed by the President of the Local Government Board to every Urban Sanitary Authority in England and Wales:—

Local Government Board, Whitehall,
SIR, December 2, 1889.

The Local Government Board have under their consideration the great and pressing question of the housing of the labouring classes. They cannot avoid the conclusion that a large number of the working population of this country are at present housed in tenements, which are either unfit for human habitation, or in such a condition as to be distinctly prejudicial to the health of the inmates. There can be no doubt of the gravity of the evils which result from the insanitary condition of the dwellings of the poor, or of the ability of sanitary authorities, by a strenuous and judicious exercise of the powers which the Legislature has conferred on them for this purpose, to effect a very material improvement in the present condition of these dwellings. The Board deem it right, therefore, again to bring specially under the attention of sanitary authorities the duties which are imposed on them by the Housing of the Working Classes Act, 1885, and the very large statutory powers which they possess in relation to this matter.

Section 7 of the Act in question, which was enacted in accordance with a recommendation contained in the report of the Royal Commission on the Housing of the Working Classes, expressly declares that it shall be the duty of every local authority entrusted with the execution of laws relating to public health and local government, to put in force, from time to time, as occasion may arise, the powers with which they are invested, so as to secure the proper sanitary condition of all premises within the area under their control.

Every sanitary authority has the power, under the Public Health Act, 1875, of taking summary proceedings for the closing of houses unfit for human habitation, and for the abatement of over-crowding in any house in their district. As the sanitary authority are aware, that Act in express terms declares that it shall be the duty of every sanitary authority to cause to be made from time to time inspection of their district, with a view to ascertain what nuisances exist calling for abatement, and to enforce the provisions of the Act for the purpose of securing the abatement of nuisances.

The word "nuisance" includes "any premises in such a state as to be a nuisance or injurious to health," and "any house or part of a house so over-crowded as to be dangerous or injurious to the health of the inmates, whether or not members of the same family."

If after notice from the sanitary authority a nuisance is not abated, or if after notice it is abated, but is, in the opinion of the authority, likely to recur on the same premises, it is their duty to institute proceedings before justices. The justices are empowered by their order to require the person on whom the order is made "to comply with all or any of the requisitions of the notice or otherwise to abate the nuisance within a time specified in the order, and to do any works necessary for that purpose." They may also make an order prohibiting the recurrence of the nuisance, and directing the execution of any works necessary "to prevent the recurrence;" or they may make an "order both requiring abatement and prohibiting the recurrence of the nuisance." By the order the justices may impose a penalty not exceeding £5 on the person on whom the order is made.

If in the judgment of the justices the nuisance is such as to render the house unfit for human habitation, they may prohibit its being used for that purpose until it is rendered fit for habitation, and in that case the house may not be let or inhabited until by a further order the justices have declared that it is habitable. A person not obeying an order for abatement, if he fails to satisfy the justices that he has used all due diligence to carry out the order, is liable for every such offence to a penalty not exceeding 10s. per day during the default, and a person knowingly or wilfully acting contrary to an order of prohibition is liable to a penalty not exceeding 20s. per day during such contrary action. And in the case of such default the authority may enter the premises to which the order relates, and abate the nuisance, and do whatever may be necessary in the execution of the order, charging the cost to the person on whom the order is made.

When two convictions in respect of the over-crowding of the same premises have taken place within a period of three months, whether the persons convicted were or were not the same, the justices may order the closing of the house for such time as they may deem necessary.

The above provisions have been found in practice to afford a simple and comparatively inexpensive means of procedure, by which a sanitary authority can, in gross cases of sanitary neglect, compel landlords either to make their houses fit for human habitation or to close them; and by which the over-crowding of houses in such a manner as to be dangerous or prejudicial to the health of the inmates can be prevented.

In addition to these powers, section 90 of the Public Health Act, 1875, as amended by section 8 of the Housing of the Working Classes Act, 1885, enables every sanitary authority to make bye-laws, enforceable by penalties, for the registration and regulation of houses let in lodgings or occupied by members of more than one family, for preventing over-crowding therein, and for securing their being kept in a clean and wholesome state. The Act also contains provisions prohibiting, except in the exceptional cases therein mentioned, the occupation of cellar dwellings, and conferring on sanitary authorities wide powers of regulation and control as regards common lodging-houses.

Apart, moreover, from the Public Health Act, 1875, numerous Acts of Parliament have from time to time been passed, with special reference to the housing of the labouring classes, which have largely increased the powers of sanitary authorities for dealing with this important question. For example, under the Artisans' Dwellings Acts, 1868 to 1885, usually known as Torrens' Acts, urban sanitary authorities are enabled not only to secure the improvement or demolition of houses which are "in a state dangerous to health, so as to be unfit for human habitation," but also to deal with any "obstructive building," *i.e.* a building which, although not in itself unfit for human habitation, is so situated that, by reason of its proximity to other buildings, it stops ventilation or otherwise makes or conduces to make such other buildings to be in a condition unfit for human habitation, or prevents proper measures from being carried into effect for remedying the evils complained of in respect of such other buildings.

Under these Acts it is the duty of the medical officer of health to report in writing to the urban sanitary authority any premises in the district coming under either of the above descriptions; and the authority are required to refer this report to a surveyor or engineer, for the purpose of ascertaining, in the case of any house alleged to be unfit for human habitation, whether the causes of the evils complained of can be remedied by structural alterations and improvements, or whether the premises ought to be demolished, and, in the case of a building reported to be an "obstructive building," whether the surveyor or engineer corroborates the statements of the medical officer of health, and what, in his opinion, will be the probable cost of acquiring the lands on which the building is erected and of pulling down the building. In the former case, if the surveyor or engineer reports that the evils complained of can be remedied by structural alterations or improvements, the sanitary authority may require the owner to execute them, and on default they may order the closing or the demolition of the premises, or may themselves execute the necessary works at the expense of the owner. On the other hand, if the report of the engineer or surveyor is to the effect that the premises should be demolished, they may order the demolition of the premises, and, on default of the owner, may themselves take down and remove them. In the case of an "obstructive building," the reports of the medical officer of health and of the surveyor or engineer must be taken into consideration by the sanitary authority; and if the authority decide to adopt them, they may require the demolition of the building. In that event, if the owner elects to retain the site, they must pay compensation for the demolition. Otherwise they may themselves purchase the site.

Further large powers for dealing with insanitary dwellings are conferred on all urban sanitary authorities by the Artisans' and Labourers' Dwellings Improvement Acts, 1875 to 1885, commonly known as Cross's Acts. The objects of these Acts are described in the preamble to the Act of 1875, which recites that various portions of many cities and boroughs are so built, and the buildings thereon are so densely inhabited, as to be highly injurious to the moral and physical welfare of the inhabitants: that there are in such areas a great number of houses, courts, and alleys, which, by reason of the want of light, air, ventilation, or proper conveniences, or from other causes, are unfit for human habitation, and fevers and diseases are constantly generated there, causing death and loss of health, not only in the courts and alleys, but also in other parts of such cities and boroughs: that it often happens that, owing to the above circumstances, and to the fact that such houses, courts, and alleys, are the property of several owners, it is not in the power of any one owner to make such alterations as are necessary for the public health: and that it is necessary for the public health that many of such houses, courts, and alleys, should be pulled down, and that such areas should be reconstructed, and that, in connection with the reconstruction of those areas, it is expedient that provision be made for dwellings for the working class who may be displaced in consequence thereof. These Acts are, in fact, intended to enable urban sanitary authorities to deal on a large scale with similar evils to those with which Torrens' Acts are designed to cope on a small scale, and to afford a remedy in cases where the mischief to be cured is not such as can be effectually met by proceedings against individual owners in respect of particular houses, but where what is required is a complete scheme for the re-arrangement and reconstruction of the streets and houses.

Lastly, by the Labouring Classes Lodging Houses Acts, 1851 to 1885, which may be adopted by any urban sanitary authority for their district, in accordance with section 10 of the Public Health Act, 1875, urban sanitary authorities are empowered, themselves, to provide "lodging-houses for the labouring classes," which expression is to be deemed to include separate houses or cottages for the labouring classes, whether containing one or several tenements. With this object they may purchase or rent land, and on such land erect buildings suitable for lodging-houses for the labouring classes, and convert any buildings into lodging-houses for those classes, and may alter, enlarge, repair, and improve the buildings, and may fit up, furnish, and supply them with the requisite furniture, fittings, and conveniences. They may also contract for the purchase or lease of any lodging-houses for the labouring classes in their district, and may appropriate the houses to the purposes of the Acts, with such additions or alterations as they deem necessary.

It will be seen from the foregoing statement with what large powers urban sanitary authorities have been invested by the Legislature with a view to enabling them to improve the sanitary

condition of the dwellings of the labouring classes. These powers have been entrusted to the sanitary authority, in order that they may be exercised for the protection of the poor, who are unable themselves, for the most part, to enforce the observance of the laws relating to the public health by their landlords. I have most urgently to impress upon the sanitary authority the grave responsibility which they incur if they neglect to put these powers in force in any case in which their exercise may be required in consequence of the insanitary conditions of any dwellings in their district.

I am, Sir,
Your obedient Servant,
The Clerk of the Urban Sanitary Authority. CHAS. T. RITCHIE.

A circular to the same effect was addressed to each of the local sanitary authorities within the metropolis, with the exception that the Nuisances Removal Acts and the Sanitary Act, 1886, take the place of the Public Health Act, and there is no reference to the Labouring Classes Lodging-Houses Acts, as those Acts within the metropolis can only be adopted by the London County Council.

The circular to the rural authorities refers simply to the provisions of the Public Health Act and the Housing of the Working Classes Act, as set out above.

NOTICES OF MEETINGS.

CHURCH OF ENGLAND BURIAL REFORM ASSOCIATION.

THE monthly conference of this Society, held at the Church House, under the presidency of the Bishop of Marlborough, was a very successful one. Among the speakers were Sir F. Milner, General the Hon. Sir Alexander Gordon, General Lowry, Major Malet, Canon the Hon. J. Leigh, Canon Barker, Dr. Norman Kerr, Mr. Fitzroy Benham, and Mr. Alfred Sington. Several resolutions were passed, among others one affirming, "That the true principle for the disposal of the dead body lies in providing against its becoming injurious to the living; and that the body, when buried, should be buried simply in a perishable coffin, and in suitable and sufficient earth."

THE METROPOLITAN PUBLIC GARDENS ASSOCIATION.

A MEETING of members was held at 83, Lancaster Gate, on December 4, when the draft of the annual report was laid on the table. The Secretary announced that six seats had been accepted for Putney Hill; that the Hammersmith Vestry had agreed to purchase a plot of ground from the Ecclesiastical Commissioners as an open space; that the Hampstead Vestry had decided to undertake the future maintenance of the Haverstock Hill play ground; and that satisfactory progress had been made with regard to the proposed preservation of the Poor's Land, Bethnal Green. It was reported that the tree planting at Putney was completed, and at East Ham was in train; and it was agreed to place four seats in Muswell Hill; to offer six seats for High Street, Kensington; to take steps with regard to the use of the Hackney Marshes, the preservation of an open space in Bromley, and of a part of the site of Millbank Prison; and to plant trees on Stratford Green. Many other important matters were brought before the meeting and carefully considered.

LOCAL INTELLIGENCE.

AT a recent weekly meeting of the Bridgwater Board of Guardians, a letter was read from Dr. Marsdon expressing regret that the Board should have refused his application for a fee of 5s. for vaccination cases in the Combwich district, and tendering his resignation as district vaccination officer. The resignation was accepted, and it was agreed to advertise for a successor.

THE Dublin Corporation and the Glasgow Town Council, sitting as the local authority, have decided to adopt the Infectious Diseases (Notification) Act.

THE salary of Dr. Rowlett, medical officer of Lurgan No. 2 Dispensary District, has been increased by £10 yearly.

UNFOUNDED CHARGE AGAINST A WORKHOUSE MEDICAL OFFICER.—Mr. Cuthbert, of Selly Oak, was tried at the Worcester assizes on November 21, on a charge of attempting to procure abortion by supplying ergot to a nurse named Murphy. The prosecutrix proved by her evidence to be a person wanting in veracity, and the jury considering that no reliance could be placed on her uncorroborated statement, immediately acquitted Mr. Cuthbert.

THE Spalding Waterworks Company have sold their undertaking to the new Lincolnshire Fen Water Company for £24,000, or £16 3s. for every £10 share.

LEITH—MORTALITY AMONG CHILDREN.—During the month of November there occurred in Leith 103 deaths, equal to a rate of 16·25 per 1,000. No less than 50 per cent. of the deaths were of children under five years of age. Thirteen deaths were caused by scarlatina, of which 42 cases were reported.

INFECTIOUS DISEASE IN EDINBURGH.—At a recent meeting of the Edinburgh Town Council, Bailie Russell referred to the great increase of infectious disease in the city. In the month of October there were twice as many cases as in any month of the preceding five years. In that month there were 531 notifications of disease, with 34 deaths, 30 of which occurred in the old town. There were four times as many cases in the old town as in the new town, and ten times as many deaths. There were on December 3 195 cases in the city hospital.

APPOINTMENTS.

MEDICAL OFFICERS OF HEALTH.

BEVAN, Richard, D.P.H., L.R.C.P.Lond., M.R.C.S., L.S.A., has been appointed Medical Officer of Health to the Borough of New Romney, Kent.

BOOTH, F., M.B., C.M.Aberdeen, has been appointed Medical Officer of Health to St. Anns-on-the-Sea, Lancashire.

COLEMAN, Gerald E., L.R.C.P.Edin., and L.M., M.R.C.S.Eng., has been re-appointed Medical Officer of Health to the Hemsworth Rural Sanitary Authority.

EVANS, R. W. J., L.R.C.P., L.R.C.S.Edin., has been re-appointed Medical Officer of Health to the Borough of Wrexham.

EVANS, William, L.R.C.P.Edin., M.R.C.S., has been re-appointed Medical Officer of Anglesey Rural Sanitary Districts, of the Anglesey and Holyhead Unions, and Beaumaris and Holyhead Urban Sanitary Districts.

KAYE, J. B., M.B. of Birmingham, has been appointed Medical Officer of Health to the Borough of Huddersfield, at a salary of £100 per annum (subject to confirmation by the Council at their meeting on December 18).

PECK, Edward G., has been appointed Medical Officer of Health to the Northowram Urban Sanitary Authority, *vice* G. H. Crowther.

RYGATE, Brougham B., has been re-appointed Medical Officer of Health to the Parish of St. George-in-the-East.

SADLER, Michael T., M.D.Lond., M.R.C.S.Eng., has been re-appointed Medical Officer of Worsborough.

SMART, William P., has been appointed Medical Officer of Health to the Hoxne Rural Sanitary Authority, *vice* W. H. Anderson, resigned.

THOMAS, Dr., has been re-appointed Medical Officer of Health to the Wellingborough Rural Sanitary Authority for the ensuing twelve months.

VIDLER, Albert Edward, M.R.C.S.Eng., L.S.A., L.R.C.P.Lond., has been appointed Medical Officer of Health to the Rye Urban Sanitary Authority.

WEBSTER, G. L., M.R.C.S., L.S.A., has been re-appointed Medical Officer to the Bewdley Borough.

YEOMAN, W. M., M.R.C.S., L.S.A., has been appointed Medical Officer of Health to the Stokesley Rural District.

POOR-LAW MEDICAL OFFICERS.

BANKS, Leonard P., L.K.Q.C.P.Irel., has been appointed Medical Officer to the Sharnbrook District of the Bedford Union, *vice* A. N. Watts, resigned.

BARON, Horatio Nelson, M.R.C.S., L.R.C.P. of Pailton, has been appointed Medical Officer and Public Vaccinator of the No. 6 District of Lutterworth Union. Salary £20 per annum and usual vaccination fees.

CANDLER, John, M.R.C.S.Eng., L.S.A., has been appointed Medical Officer to the Mendham District of the Hoxne Union, *vice* Dr. W. H. Anderson, resigned.

CAUDWELL, A. H., M.B., C.M., has been appointed Medical Officer to the Woodstock Union Workhouse and No. 1 District of Woodstock, *vice* A. H. Mair, M.B., C.M., resigned.

CONNOR, William G., L.R.C.S.Irel., L.K.Q.C.P., has been appointed Medical Officer and Public Vaccinator to the Earl Soham District of the Plomesgate Union and Bedfield District of the Hoxne Unic*.

CORKERY, Dr., of Alfreton, has been appointed Medical Officer and Public Vaccinator to the Shirland District of the Chesterfield Union, *vice* Dr. Roberts, of Alfreton, deceased.

EVANS, Owen, M.R.C.S., L.S.A., has been appointed Medical Officer to the Bellwsycoed and Trefew District of the Llanrwst Union.

FARRER, Dr., has been re-appointed Medical Officer to the Manea District of the North Witchford Union, Cambridgeshire, at a salary of £45.

FRASER, Donald A., M.D.Brus., M.R.C.S.Eng., L.S.A., has been appointed Medical Officer to the Berry Pomeroy District of the Totnes Union, *vice* Mr. John Currie, resigned.

GRIFFITHS, Evan, L.R.C.P., L.R.C.S.Edin., has been appointed Medical Officer of the Llanbyther District of the Lampeter Union.

HAINS, Lalande John Cary, L.R.C.P., L.R.C.S.Edin. and Lon., has been appointed Medical Officer to the Totnes District, Totnes Union, *vice* J. Raby, resigned.

HALL, E. F., M.D.St. Andrews, M.R.C.S.Eng., has been re-appointed Medical Officer of Huyton-with-Roby Union District.

HAMILTON, Henry, M.R.C.S.Eng., L.S.A., has been appointed Medical Officer of the Wymondham District of the Melton Mowbray Union, *vice* Dr. A. Rattray, resigned.

HARRIS, G. J., has been appointed Medical Officer and Public Vaccinator to the Ansty District of the Barrow Union, at a salary of £10 a year, *vice* Mr. Sills, resigned.

HAWKINS, W. R. T., M.R.C.S., L.S.A., has been re-appointed Medical Officer to the Second District of Barton Regis Union for a further period of 3 years.

KILLEEN, T. R., L.R.C.S., L.K.Q.C.P.I., has been appointed Medical Officer to the Killaniv Dispensary District, and Medical Officer for Ennis Union, *vice* P. W. Dillon, M.D., resigned.

LAIT, William, M.R.C.S., L.S.A., has been appointed Medical Officer to the Workhouse Infirmary, Torrington Union, *vice* J. D. Jones.

LANGSTON, John I., L.K.Q.C.P.I., L.M., and L.S.A.Lond., has been appointed Medical Officer and Public Vaccinator to the No 3 District of the Hollingbourn Union, *vice* T. S. Hutchinson, deceased.

LOWNDS, James R., M.R.C.S.Eng., L.S.A., has been appointed Medical Officer of the Green Hammerton District of the Great Ouseburn Union, *vice* Henry Foster, M.R.C.S., resigned.

MACKENZIE, M. S., M.D.Irel., L.R.C.S.Edin., has been appointed Medical Officer of the Lisburn Dispensary District.

MCLEAN, W. W. L., has been appointed Medical Officer to the Stockney District of the Spilsby Union, *vice* J. A. McLean, resigned.

MOORE, W., M.R.C.S., L.S.A., has been appointed Medical Officer to the Astley District of the Martley Union, *vice* G. F. Masterman, resigned.

MUGFORD, Sidney A., L.R.C.P.Lond., M.R.C.S., has been appointed Medical Officer to the Wix District of the Tendring Union, *vice* Thomas Peat, deceased.

NEALE, George, L.R.C.P., L.R.C.S.Edin., has been appointed Medical Officer to the Barry District of Cardiff Union.

O'FARRELL, Charles, L.R.C.P.Edin., L.R.C.S.Edin., has been appointed Medical Officer of the North District of the Parish of Great Yarmouth, *vice* A. Mitchell.

ORD, William T., L.R.C.P.Lond., M.R.C.S.Eng., has been appointed Medical Officer to the Halesowen District of the Stourbridge Union, *vice* Dr. T. G. McLauchlan, resigned.

PICKEN, James, M.B., C.M.Glasgow, has been appointed Medical Officer to the Rawmarsh District of the Rotherham Union.

PRIESTLEY, Joseph, M.R.C.S.Eng., M.B., M.D.Edin., of Twickenham, has been appointed Medical Officer of the Northern District of the Parish of Whittlesea, and Public Vaccinator, at a salary of £70 per annum, and fees.

PURVES, A. S., M.D.Edin., has been appointed Medical Officer of the Lesbury District, Alnwick Union, *vice* Dr. Main, resigned.

RAMSDEN, Herbert, has been appointed Medical Officer to the Township of Saddleworth (new appointment).

RHODES, Dr., has been re-appointed Medical Officer to the Glossop Union.

ROBERTSON, C., has been appointed Assistant Medical Officer of the Infirmary of the Parish of Birmingham.

ROE, Walter M., M.R.C.S., L.S.A., has been appointed Medical Officer of the Wincanton District and Workhouse, Wincanton Union, *vice* R. B. Wybrants, resigned.

SHARPE, J. Henry, M.D.Irel., has been appointed Medical Officer of the Huntspill District, Bridgwater Union, *vice* Jeremiah Wase, deceased.

SHIVES, John, M.D.Aberdeen, L.R.C.S.Edin., has been re-appointed Medical Officer of the Liversedge Union District.

SMART, A., M.R.C.S.Eng., has been appointed Medical Officer and Public Vaccinator to the Maidstone Union, *vice* A. A. Doyle, L.K.Q.C.P.I., resigned.

SMART, W. P., has been appointed Medical Officer to the Fressingfield and Laxfield Districts of the Hoxne Union, *vice* Dr. W. H. Anderson, resigned.

STAEL, Arthur R., L.R.C.P., L.R.C.S.Edin., has been appointed Medical Officer of the Sandal Magna District of the Wakefield Union, *vice* W. Stranger.

SYKES, John, L.R.C.P.Lond., F.R.C.S.Eng., has been appointed Medical Officer to the 5th District of the North Bierley Union, *vice* Dr. B. C. Sykes, resigned.

WINSHIP, W. A., M.R.C.S., L.S.A., has been appointed Medical Officer to the Elsdon District of the Rothbury Union.

YEOMAN, William M., M.R.C.S., L.S.A., has been appointed Medical Officer to the Stokesley District and Workhouse of the Stokesley Union, *vice* Dr. W. G. Forbes, deceased.

CERTIFYING FACTORY SURGEON.

LANGSTON, John, L.K.Q.C.P.I., L.M., L.S.A.Lond., has been appointed Certifying Factory Surgeon to the Rainham District.

INSPECTORS OF NUISANCES.

AMOS, J., has been appointed Inspector of Nuisances to the Erith Local Board.

CROWHURST, Albert B., has been appointed Inspector of Nuisances to the Amersham Rural Sanitary Authority, *vice* F. Bryan, resigned.

GREENWELL, Allan, has been appointed Inspector of Nuisances to the Thakeham Union Rural Sanitary Authority, *vice* Thomas Challen, deceased.

HORNER, B. B., of Bradford, has been appointed Inspector of Nuisances to the Camberwell Vestry.

LONGHURST, E., of Fawkham, has been appointed by the Dartford Rural Sanitary Authority Inspector of Nuisances for Stone and Swanscombe, at a salary of £50 per year.

MORGAN, Gomer S., has been appointed Inspector of Nuisances to the Pontypridd Rural Sanitary Authority, *vice* J. Evans, resigned.

ROBERTS, John, has been appointed Inspector of Nuisances to the Llanrwst Rural Sanitary Authority, *vice* E. Evans, resigned.

SCHOLEY, Thomas, has been re-appointed Inspector of Nuisances to the Hemsworth Rural Sanitary Authority.

SMYTHE, Francis, has been appointed Inspector of Nuisances to the Finchley Urban Sanitary Authority, *vice* G. W. Brumell, resigned.

THOMAS, W., has been appointed Inspector of Nuisances to the Pembroke Rural Sanitary Authority, *vice* J. T. Lewis, deceased.

VEALE, T. O. (borough surveyor), has been appointed Inspector of Nuisances to the Dartmouth Town Council, at a salary of £10 per year.

VICKERS, William, jun., has been appointed Inspector of Nuisances to the Beverley Rural Sanitary Authority, *vice* J. Sugdon.

WARE, A. J., has been appointed Inspector of Nuisances to the Belford Rural Sanitary Authority, *vice* T. Short, resigned.

WOOD, Henry, has been appointed Inspector of Nuisances to the Farnley Tyas Urban Sanitary District, Huddersfield Union, *vice* J. Kaye, resigned.

PUBLIC ANALYST.

REED, Lester, has been appointed Analyst to the Croydon County Borough (a new appointment).

SURVEYORS.

COOK, John, of Bury, has been appointed Borough Surveyor of Lancaster, *vice* Mr. Creer, who has been appointed Borough Surveyor of York.

EYRE, William, has been re-appointed Surveyor and Sanitary Inspector to the Gainsborough Board of Guardians, at a salary of £100 per annum.

GREENWOOD, Joseph, has been re-appointed Surveyor and Inspector of Nuisances to the Ulverstone Rural Sanitary Authority, for a term of three years at the same salary, &c., as heretofore.

SCOONES, W., Assistant Surveyor of Beckenham, has been appointed Surveyor to the Maidstone Local Board, *vice* F. J. May, who is now Borough Surveyor of Brighton.

SMITH, Walter, has been appointed Surveyor of Stoneleigh, Warwickshire.

CLERKS.

CROOK, Victor, Chief Clerk in the Town Clerk's Office, Wolverhampton, has been appointed Assistant Town Clerk of Walsall, at a salary of £110 per annum.

JAMES, Frank T., has been appointed Clerk to the Guardians of the Merthyr Tydul Union, *vice* Frank James, resigned.

NEWMAN, J. R., has been appointed Assistant Clerk to the St. Pancras Guardians.

WAKEFIELD, J. H., of Wolverhampton, has been appointed Accountant to the Borough of Bury St. Edmunds.

RESIGNATIONS.

ARMSTRONG, L. H., Medical Officer to the Bedale District of the Leyburn Union.

BLASSON, Thomas, Medical Officer to the Osbowinby District of the Sleaford Union.

BONING, Jonathan, Inspector of Nuisances to the Royston Rural Sanitary Authority.

CLARKE, Dr., for thirty years Medical Officer for Wentworth, Rotherham.

DOWNS, William, Medical Officer of the Chesterton District of the Wolstanton and Burslem Union.

DUNSTAN, R., Medical Officer of the St. Just District of the Truro Union.

GABB, A. W., Medical Officer to the No. 4 District of the Northleach Union.

KERR, Joshua L., Medical Officer of the Edenfield District of the Haslingden Union.

LAWSON, Thomas C., M.R.S.Eng., L.S.A., Medical Officer to the Capel District of the Samford Union.

MAIR, A. H., M.A.Aberd., M.B. and C.M., Medical Officer of the No. 1 District and Workhouse of the Woodstock Union.

MARSDON, Dr., District Medical Officer, Combwich District Bridgwater Union.

MEDCALF, Ernest, L.R.C.P.Edin. and Lond., M.R.C.S.Eng., L.S.A., Medical Officer of the First District of Steyning Union.

PIGG, C. R., Medical Officer of the 7th District of the Tendring Union.

PRINCE, Frederick, M.R.C.S.Eng., L.S.A., Medical Officer to the Duxford District of the Linton Union.

SILLES, Thomas S., Medical Officer to the Ausley District of the Barrow-upon-Soar Union.

SPACKMAN, Dr. F. R., Medical Officer to the 3rd District of St. Albion's Union.

STRICKLAND, Charles E., L.K.Q.C.P.Irel., M.R.C.S., Medical Officer of the Kidsgrove District of the Wolstanton and Burslem Union.

WOODD, Dr., Medical Officer to the Calstock District of the Tavistock Union (December 25).

WOODHAMS, J. A., Medical Officer of Health to the Rye Urban Sanitary Authority.

VACANCIES.

ASSISTANT ENGINEER.—The London County Council is about to appoint an Assistant Engineer whose duty it will be, under the direction of the Chief Engineer, to take charge of, and be

responsible for, the sewerage and other engineering works in an area comprising the Northern, Central, and Eastern Districts of London. Salary £600 a year; no superannuation or pension. The holder of the office will be required to give his whole time to the duties; will not be allowed to take any private practice or to hold any other appointment. Age must not be less than 30, or more than 50. Applications, with copies of recent testimonials, to be sent to the Clerk of the London County Council, Spring Gardens, S.W., not later than Friday, December 20. Applications to be endorsed on the outside "Assistant Engineer."

CHIEF SURVEYOR.—Wanted by the Essex County Council, a Chief Surveyor of main roads, and their bridges and rivers. A member or associate member of the Institution of Civil Engineers, who will be held responsible for the proper maintenance of main roads and their bridges. Each candidate to state, in writing, his views respecting the system to be adopted in dealing with the roads and bridges, and the number of assistants he would require. He must live in the county, in a place approved by the Committee, and not hold any other appointment. Salary £500 per annum; £100 per annum to be allowed for all expenses; no superannuation or pension attaches to the office. The Surveyor will be required to enter into a bond for £500 with two sureties for £250 each for the due performance of his office. Applications, enclosing copies of testimonials (marked "Chief Surveyor of Roads"), to reach the Clerk of the County Council, Chelmsford, not later than December 17.

SURVEYOR.—The Berwick-on-Tweed Urban Sanitary Authority require a properly qualified person to perform the duties of Surveyor for their district. Salary £150 a year, to include all expenses. Applications, in Candidates' own handwriting, stating age, present and previous occupation, with recent testimonials, to be sent to the undersigned not later than December 18.—Robert Weddell, Clerk to the Authority.

ASSISTANT SURVEYOR.—The Smethwick Local Board require an Assistant Surveyor. Salary £75 a year. Address, in own handwriting, with copies of testimonials, to be sent to Mr. John C. Stuart, Public Buildings, Smethwick, by December 18.

INSPECTOR OF NUISANCES.—The Wood Green Urban Sanitary Authorities will, on January 3, proceed to the appointment of an Inspector of Nuisances for the district. Area, 1,640 acres; population (estimated) 25,000; ratable value £87,546. Appointment for one year only. Salary £100 per annum. Person appointed must give his whole time. Applications, with testimonials of recent date, to be sent to W. Joy Hewetson, Esq., Clerk to the Wood Green Urban Sanitary Authority, not later than December 27, marked "Nuisance Inspector."

MEDICAL OFFICER (resident) required for the Grantham Friendly and Trades Societies Medical Institution. Salary £150 per annum, and medical fees, with residence, coals, gas, and rates free. Must be duly qualified. Age not under 30. Applications by December 16, to Mr. F. Hullott, Grantham. Candidates to state when duties can be commenced.

COUNTY SURVEYOR.—A County Surveyor is required by the County Council of Glamorgan, whose duties will be to Superintend the Main Roads, Bridges, and County Buildings of the County. Salary £750 per annum, which includes an allowance of £150 per annum for clerks, offices, travelling, &c. He must be an experienced Civil Engineer, capable of surveying and making roads, and reporting thereon, of planning and erecting bridges, and reporting thereon, and of generally superintending the County buildings. He must devote his whole time to the duties, and must reside at Neath, Pontypridd, or Bridgend. Applications, accompanied by testimonials, and a statement of the age of the applicant, must be made by letter only, not later than December 20, 1889, to Richard E. Spencer, Clerk to the Roads and Bridges Committee, 6, Working Street, Cardiff.

RESIDENT ENGINEER.—The Corporation of Preston require a Resident Engineer for the Ribble Navigation. He must be an engineer of experience in dock works, &c., and will have to devote the whole of his time to the duties of his office. Sealed applications, stating qualifications, experience, and salary required, accompanied by copies of recent testimonials, to be addressed to the Town Clerk, and endorsed "Application for Resident Engineer," and must be left at the Town Clerk's Office, Town Hall, Preston, before 12 noon on Tuesday, December 17.—H. Hamer, Town Clerk, Town Hall, Preston.

DEATHS.

BRANCHI, Mr., Medical Officer of Health to the St. Saviour's Board of Works.

FISK, J. C., Clerk to the Guardians of the Woodbridge Union.

HUTCHINSON, Thomas S., Medical Officer to the 3rd District of the Hillingbourn Union.

JONES, Dr. W. P., Medical Officer of Health to the Kingston Rural Sanitary Authority.

KINGTON, J., Inspector of Nuisances to the Idle Urban Sanitary Authority, North Bierley Union.

MUNN, John K., Medical Officer to the Stock and Bradley District of the Droitwich Union.

PALMER, William Grimes, L.R.C.P.Edin., M.R.C.S.Eng., Medical Officer of Health to the Longborough Rural Sanitary Authority.

CONTRACTS.

CONSTRUCTION OF SEWER.

THE Acton Local Board invites Tenders for the construction of sewer and other works, in King Street, Acton.

Drawings and Specifications may be obtained at the office of Mr. D. J. Ebbetts, Surveyor to the Board.

Tenders to be delivered not later than December 17.

The Macclesfield Local Board of Health invite Tenders for the supply of Drain-pipes, Castings, Disinfectants, &c.

Forms may be obtained at the Borough Surveyor's office.

Tenders, addressed to the Chairman of the Highways Committee, Town Hall, to be sent in not later than December 18.

MANCHESTER CORPORATION WATERWORKS.

(Thirlmere: Works at Outlet and Roads.)

The Waterworks Committee are prepared to receive Tenders for the construction of the works at the outlet of the Lake, comprising masonry, concrete embankments, discharge tunnel, pipe-laying, valve-shafts, waste weir, and waste water-course, and gauge-basins, together with the formation and construction of 8¼ miles of roads on the eastern and western sides and at the northern end of the Lake, with Bridges, Culverts, &c.

Plans and drawings may be seen, and printed specification and quantities obtained, on application to Mr. G. H. Hill, C.E., Albert Chambers, Albert Square, Manchester.

Sealed Tenders, endorsed "Tender for Works at Outlet and Roads, Thirlmere, Contract No. 10," and addressed to the Chairman of the Waterworks Committee, must be forwarded to Mr. T. H. G. Berrey, Waterworks Offices, Town Hall, Manchester, not later than December 24.

JOSEPH HERRON, Town Clerk.

The Waterworks Committee of the Manchester Corporation are prepared to receive samples of Stand Pipes with Metres attached, or Portable Meters, for watering streets from the public hydrants.

Samples, with prices, addressed to the Chairman of the Waterworks Committee, to be sent, carriage paid, to Mr. T. H. G. Berrey, C.E., Waterworks Offices, Town Hall, Manchester, by December 31.

JOSEPH HERRON, Town Clerk.

SEWERAGE AND WATER SUPPLY SCHEME.

(To Engineers.)

The Corporation of Clonmell have in contemplation the introduction of a High-pressure Water Supply for the Town, and the construction of a Sewerage System in connection therewith.

They invite competent engineers to send in plans and estimates on or before Saturday, February 1, 1890.

Conditions, particulars, &c., may be obtained on application to the Town Clerk, upon payment of a fee of one guinea, which will be returned on receipt of a *bond fide* plan.

JOHN F. O'BRIEN, Town Clerk.

Town Clerk's Office, Clonmell.

CONSTRUCTION OF SEWER.

The Walthamstow Local Board invite Tenders for supplying and laying about 1,000 lineal yards of 18-in. patent Watertight-jointed Glazed Pipes, with all necessary works connected therewith, as an outlet for the Board's Sewage Farm.

Forms of Tender may be obtained, and plans and specifications inspected, at the Surveyor's Office, Town Hall, Walthamstow.

Tenders, on the forms, sealed and endorsed "Tender for Effluent Sewer," to be sent to the undersigned not later than December 20.

GILBERT HOUGHTON, Clerk.

The Ramsbottom Local Board invite Tenders for the supply of 650 yards of Circular-socketed, Glazed, Earthenware Sewer Pipes, 24-in. diam., and 1-10th of such diameter in thickness, to be delivered at Ramsbottom station.

Sealed Tenders, endorsed "Tender for Sewer Pipes," to be delivered to Mr. W. Wild, Clerk, Ramsbottom, by December 17.

The Roads and Bridges Committee of the Northumberland County Council invite Tenders for the supply and erection of about 24 tons of girder work, &c., in connection with the reconstruction of a bridge of 56 feet span over the river Till, near Chatton, Northumberland.

Plans, &c., may be seen and forms of Tender obtained on application at the County Surveyor's Office, Newcastle.

Sealed Tenders, marked "Lytham Bridge," must be sent addressed H. Smeyd-Kynnersley, Moot Hall, Newcastle-on-Tyne, not later than Thursday, January 2, 1890.

ALTON (HANTS) LOCAL BOARD SEWERAGE WORKS.

(Contract No. 1.)

The Alton Local Board invite Tenders for supplying and delivering about 60 tons of cast-iron pipes.

The Drawing and Specifications may be seen, and the bill of quantities obtained of the Engineer, Mr. J. Messergh, 5, Victoria Street, London, S.W.

Sealed Tenders must be delivered at the office of Mr. Wm. Trimmer, Clerk, not later than Monday, December 23.

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COMPETITIONS.

COUNTY BOROUGH OF SOUTH SHIELDS.
(To Architects.)

THE Corporation invites competitive plans, &c., for the erection of new Police Buildings (cost not to exceed £10,000, exclusive of site, furnishings, and architect's commission).

Premiums will be awarded to the authors of the three selected designs, viz:—

£50 to the design considered first in order of merit; £30 to the design considered second; and £20 to the design considered third.

Lithographed plan of site, and copy of conditions, may be obtained on application to Mr. Matthew Hall, Borough Engineer.

Drawings, &c., to be deposited at the Borough Engineer's Office, addressed to the undersigned, not later than February 15, 1890.

JOSEPH M. MOORE, Town Clerk.

THE SANITARY INSTITUTE.
Parkes Museum, 74A, Margaret Street, W.

AT an Examination held for Inspectors of Nuisances, Nov. 21 and 22, 69 candidates presented themselves. Questions were set to be answered in writing on the 21st (see page 143), and the candidates were examined *viva voce* on the 22nd.

The following candidates were certified to be competent, as regards their sanitary knowledge, to discharge the duties of Inspector of Nuisances:—

Bailey, George, 159, Parrock Street, Gravesend.
Baxter, Frank Ernest, 374, Kennington Road, S.E.
Bird, William Fred., Heath Villa, Radstock.
Bond, William Henry, 20, Hanley Road, Hornsey Rise.
Bryan, George John, 4, South Norwood Hill.
Callaway, Albert Henry, Stratford-on-Avon.
Clarke, William Henry, 3, Priory Street, Coventry.
Copstick, George Christopher, 10, Charnwood Street, Derby.
Corben, Joseph, 19, Camden Street, Gosport.
Corbett, Richard Lawrence, Oakengates, Salop.
Craig, George Alexander, 34, Howick Street, Alnwick.
Crosse, Hammond W., St. Mary's Cottage, Putney.
Crowther, William Christopher, 31, Victoria Street, Blackpool.
Edmonds, Henry James, 76, St. John's Street Road, E.C.
Edwards, William, 14, Nunhead Grove, S.E.
Elliot, Edward, 37, Ethelbert Road, Margate.
Fulcher, George, Bridge Terrace, St. Ives, Hunts.
Gibson, John, Stanghow Road, New Skelton, R.S.O.
Gillies, Neill, Lochgilphead, Argyllshire.
Hall, George Berringer, F.G.S., 100, Queen's Road, Finsbury Park.
Harrison, Henry, 5, Beaconsfield Terrace Road, W., Kensington Park.
Hay, Alexander, 38, Cochrane Street, Glasgow.
Hooper, William, 7, Treuholme Road, Anerley.
Hoyle, John Herbert, 19, Rochdale Road, Milnrow, Rochdale.
Ingram, William James, Woking, Surrey.
Imrie, Henry William, 28, Perry Place, Plumstead.
Jellis, John, 59, Radbourne Street, Derby.
Larke, James, 30, Guildford Road, Greenwich.
Lilly, William Gent, 5, Whitcomb Street, Pall Mall.
Littleton, Louis, 45, Roundhill Street, Bradford.
Mackness, Thomas Jackson, Holmedale, Church End, Finchley.
Palmer, Henry Arthur, Shawell, Rugby.
Phillips, Henry, 14, Manchester Street, Gray's Inn Road.
Poggio, Eloi John, 20, Marylands Road, Harrow Road.
Roberts, Robert Owen, Guildhall, Carnarvon.
Robinson, John, 79, Lavender Road, Clapham Junction.
Shaw, Peter, 13, Gertrude Street, Fulham Road.
Veit, Leonard James, 791, Old Kent Road, S.E.
Watts, Gerald, 5, Portman Buildings, Lisson Grove.

NOTES AND QUERIES.

HISTORY OF ENGLISH SANITATION.

Would you kindly give me any information you may possess on the following subject, or inform me as to the most likely source whence to obtain the information I require. I wish to get some kind of retrospective history of sanitary conditions and laws, if any such existed, prior to the passing of the Public Health Act of 1875. In fact I want any or all the information I can get on the early History of English Sanitation. Possibly you may be able to tell me something of the literature of the subject.

A LECTURER.

[There is no single volume, with which we are acquainted containing a full history of English sanitation, but much information (though by no means all that is to be had) on the general subject may be culled from the following publications:—(1) The Second Report (Volume I.) of the "Royal Sanitary Commission" (published in 1871 as a Command Paper, No. 281, price 2s.) contains a short history (or rather list) of the English Sanitary Laws, beginning with the Act of 1388 (12 Richard II., chap. 13), which imposed a penalty of £20 upon persons who cast animal filth and refuse into rivers and ditches, and which may be considered as the first Sanitary Law in the Statute Book. In the same Blue-Book there is also some analysis of the various methods of local self-government. (2) In the First Report of the Royal Sanitary Commission, published in 1869 (price 5s.) there is to be found some very useful and interesting evidence by the late Mr. Tom Taylor, Mr. (now Sir John) Simon, and other sanitarians, as to sanitary administration between 1840 and 1869. (3) The condition of England about the year 1840 is very graphically described in the "Report to Her Majesty's Principal Secretary of State for the Home Department from the Poor Law Commissioners, on an Inquiry into the Sanitary Condition of the Labouring Population of Great Britain." That report, which was really one by Mr. (now Sir Edwin) Chadwick, the "Father of modern Sanitary Science," was published in 1842. (4) In the Report of the General Board of Health of 1858 on the "Sanitary State of the People of England," there is also much useful information. (5) There were also elaborate reports made and published by the inspectors of the old General Board of Health between 1850 and 1860 as to all the larger towns throughout the country, but those reports are not now easily accessible except in libraries. (6) The Public Health Reports of Sir John Simon also show the progress of sanitation during the last fifty years. (7) Another very instructive paper is that read in November 1887 before the Epidemiological Society by Dr. R. Thorne Thorne, on "The Progress of Preventive Medicine during the Victorian Era," and which was subsequently published as a separate pamphlet by Messrs. Shaw & Sons, Fetter Lane, London, E.C.—ED.]

Re "SEWER" *v.* "DRAIN."

Having read definitions of "sewer," "drain," "curtilage," &c., in the Public Health Act, I wish to ask is a drain down a public street, as shown in red lines on the accompanying sketch, a private drain or a public sewer? There are seven houses in the front row all belonging to the same owner, and the drains from six of them are connected with the "drain" or "sewer" in the street, and the sewage from no other house enters the drain or sewer, except at the opening made for the accommodation of the odd cottage situate at the point where the drain or sewer enters the field, which also belongs to the same owner. The drain or sewer runs some 66 yards down the street, it then enters a field belonging to the owner of the houses, then runs some 19 yards down the field and empties itself into a cesspool or hole in the ground. You will perceive that there are ten houses in the block, six of them being back to back houses, the three in the "curtilage" or backside are drained into another field belonging to the same owner.

CONSTANT READER.

[There seems no doubt that the drain in question is a sewer. In ordinary language the different cottages are not within the same curtilage. The word as far as we know has its ordinary meaning in the Public Health Act.—ED.]

A B and C are adjoining house owners, whose drainage joins into one pipe leading into the main sewer in the street. Shortly beyond the last junction (that of C), and before arriving at the street, a stoppage occurs requiring some structural alteration. Who is liable to do this? A B and C severally and conjointly, or the sanitary authority, on the ground that when a drain receives the drainage of more than one house it becomes a sewer? The part where the stoppage occurs was laid by private expense.

S. P. S.

[The joint pipe is clearly a sewer within the meaning of sec. 4 of the Public Health Act. The fact that it was originally laid at private expense makes no difference in this respect. The sanitary authority are bound under sec. 15 to make good the defect.—ED.]

HOW TO DISINFECT, &c.

"Cambria" asks—(1.) How to disinfect a two-roomed thatched cottage in which there is a patient who has reached the desquamating stage of scarlet fever? Whether fumigation may be dispensed with if walls of room are stripped, the paper burnt, walls lime-washed, and woodwork cleansed with hot water and carbolic acid? What aerial disinfectant can be used in place of sulphur fumes? (2.) Asks information as to the nature of the examination for inspectors of weights and measures referred to in the Act of 1889, and as to where and by whom it is held.

[(1.) In all cases fumigate first with sulphur, the cleansing described is insufficient. On no account disinfect during desquamation a room to be reoccupied by the patient; the disease is at its most infectious stage, and the work would have to be done again. There are other aerial disinfectants besides sulphur, but none so safe and efficient. If a room to be disinfected cannot be vacated, the work cannot be done; what would be necessary to kill disease germs would also kill the occupant. It is the duty of the medical officer to give directions for disinfection; if from any cause you are prevented from following out in full his general instructions, protect yourself by immediately reporting the fact, and requesting orders, in any special case. (2.) Nothing appears to have been published on these points at present. Information would be procurable at the offices of the Board of Trade, or—through a member of the trade—of the Secretary of the Association of Scale Makers, who, being interested, would doubtless have the latest information.—ED.]

ORIGINAL PAPERS.

THE HOUSING OF THE POOR.

By MARY JEUNE.

THE revelations regarding the houses of the poor in the East End of London hardly seem to have come to an end, for from day to day the papers contain accounts of complaints made by the tenants of unsanitary houses, as to their condition and their inability to discover their landlord, or to obtain any redress from him when they have penetrated his incognito. Very recently the coroner for East London held an inquest on the body of a man who had been killed by falling from the top to the bottom of a very steep staircase in his house, in consequence of the stairs having no handrail. The stair was dark, and the man missed his footing and fell. The evidence as to the condition of the house was disgraceful. The pipes from the cistern were all stopped up, and the people in the house had to get on a chair in order to procure water from the cistern. The woman said she had complained repeatedly to the agent who collected the rent, but nothing had been done, the landlord's excuse being that the houses were to come down, and she paid 7s. a week for this wretched habitation. Such a story deserves severer comment than the message the jury sent to the owner, that the man's death was due to the dangerous condition of the staircase, for if it had been from any other cause a much more severe view would have been taken. The rigorous punishment which is enforced against an engine-driver, a pointsman, or any other over-worked railway officials, to whose oversight an accident is due, stands out in striking contrast to the verdicts of coroners and jurymen, on the causes that lead to the death of hundreds of poor people in London, of which over-crowding, bad drainage, and water are the principal, and to which public opinion has never been properly directed.

The helplessness and ignorance of the poor as regards the means of protection they possess is indescribable; they are too busy, and their work is too uncertain to risk the chance of losing even the hour that they require to lay their wrongs before a friendly police magistrate, added to which they are proud and very suspicious of even those who will assist them.

If bad drains and smells, badly roofed houses, and general squalor are the conditions of their life indoors, their surroundings outside are no better. Apart from the dilapidated appearance of the houses, doors, and windows, the condition of the streets and gutters is as bad. In the main thoroughfares of the East End some attempts at scavenging are made, and the dust and mud carts clean and take away a good deal of refuse; but in the narrow streets, alleys, and courts, nothing of the sort is done systematically, and after an absence of two or three days from a locality one goes back and recognizes the dead cat more decayed, the old hat more battered, and the vegetables that one saw on one's last visit still there in the last stage of rottenness and stench. No dust or mud cart ever goes down such streets as a matter of course, though after the refuse of many houses has been thrown into the street, before the open doors of the dwellings, and remained there for some days, some inhabitant more fastidious than his neighbours makes a fuss, and the place is cleaned in a perfunctory manner. A schoolmaster of one of the largest Board schools in Shoreditch complained bitterly of the condition of the streets and pavement round his school, saying, with perfect truth, that all the attempts made to refine and improve the children in school were useless when on their getting out to play the first objects that met their view were the refuse of the streets, which they pick up and throw at each other. He had experienced the greatest difficulty in getting his repeated requests—to have the streets cleaned—attended to.

The fact is that the local authorities for dealing with such matters are hopelessly apathetic and indifferent, and they have infected the people appointed to carry out the details of their work with the same feeling. There is no public opinion down in those parts to bear on them, and what from time to time is written and said by the press is spasmodic, and the authorities are perfectly aware it will not go inconveniently further than the attention directed to it by a few newspaper articles. They are all local people, very little better by birth and education than the poor they ought to protect, and have become so habituated to the life around them that they think nothing of it. They have grown up to consider the poor, dirty, squalid, dishonest, and complaining, and they see no alternative existence for them, always forgetting that their conditions of life make them what they are. Any vestryman who attempted to elevate or improve the condition of the people would be so laughed at and ridiculed, and find such insuperable obstacles placed in his way, that he would have to relinquish his aspirations in despair; and there are many medical officers whose experience is the same. Most medical and sanitary officers are willing and anxious enough to enforce the laws, and carry out the functions entrusted to them, but the vestry interest presents an unbroken opposition to any new-fangled ideas for improving the condition of the poor.

How far the County Council is to be the universal remedy for all municipal shortcomings we have yet to see; but I for one cannot say, looking to its composition, that there is much to hope from it. It is elected too much as a political body, and it will continue to be such, and therefore to objects more or less political will its attention be given and its time devoted. Its members will be chosen from the two political parties, and they will devote their energies to matters which will help them politically, for the County Council will assuredly become a stepping-stone to the House of Commons. We shall probably see an attempt, more or less spasmodic, to put the Shaftesbury Acts into force, and Sir Edward Guinness's Trust may stimulate private generosity, and a few industrial dwellings to meet the wants of the very poor will be erected, but there is no reason why the experience of the past should be materially altered in the future. The new dwellings will be tenanted by foreigners and aliens, unless some rules prohibiting any but Londoners to inhabit them are made, and the present small house property, where it is not demolished, will continue to exist, and the evil in a small degree only will be mitigated. The County Council's hot fit of reform will have passed away, the vestry conscience will slumber again, and the hard, stern struggle for life will keep the poor as occupied, listless and indifferent to their houses as they are now. There is only one cure for the evil, and everyone who knows anything of the indifference and culpable apathy of the municipal authorities must

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recognize that it would be the only satisfactory way of dealing with it.

As a beginning, the appointment of all medical officers of health and inspectors of nuisances should be made direct from the Local Government Board, and be independent of the vestry. The powers given to them for enforcing the sanitary laws, as regards closing houses unfit for habitation, should be wider, more absolute, and should be carried out more expeditiously than at present, while the penalties inflicted on the owners of insanitary property, who having been warned by the medical officer and delayed carrying out their suggestions as to their improvement, should be heavy, and strictly enforced. By appointing inspectors who would be independent of the vestry, we should at once have a body of men who would be influenced by no feeling but that of duty, and who would incur no danger of dismissal or punishment if they carried out the most drastic improvements, and the poor would feel a confidence in appealing to individuals who were perfectly honest, and have no interest at heart but to make their lives more bearable. Some of the medical officers of health who have been recently appointed are now only dismissable with the sanction of the Local Government Board, and there should be no exception to the rule.

If, however, the present dwellings of the London poor are to disappear, there is only one way to do it, and that is by the State undertaking to be their landlord. The proposition is startling, for the work is gigantic and the difficulties to be overcome so great, that it seems, at first, a vision of the wildest kind. And yet Commissioners to carry out the work, and manage the details, such as the Ecclesiastical Commissioners or the Charity Commissioners, might be appointed by the Crown, for the work of either of these two above-mentioned bodies has been as large, novel, and difficult as any the new Commission would have to undertake. The money for building could be raised in the same way as by the County Council, for the financial soundness of the work is no longer a matter of doubt. In fact, the only difference between such a plan and the machinery now existing is, that the body to whom the carrying out of the work would be entrusted, would be one directly under the control of the Crown, instead of the ratepayers, and they would at once set to work to put the Shaftesbury Acts into operation. Such a body would give at once a guarantee that the importance of the work was recognized, and that it was a national one, not affecting localities but the whole country, and its operations need not be confined to London alone.

The expense of such an organization should not be large, nor need its work cost more to carry out than if it were undertaken by local authorities, and it should be partly composed of men with practical knowledge and experience as regards building, valuation of land, and all matters pertaining thereto. Whether the buildings when completed should be handed over to the County Council to find tenants, collect rents, and keep in repair, the commissioners only retaining a power of inspection, are important details which require consideration. The great advantage of creating a body whose work was only to build, would be found in the rapidity with which the wretched dwellings now existing would disappear, and new ones take their place, into which the present tenants could at once move, so as not to condemn them to live, as is always the case under present circumstances, for an unlimited period in houses much worse than those they have quitted; for at present, any demolitions or new buildings are carried out on so small a scale, and at long intervals, the erection of dwellings being only part of the work of the County Council, and not its only function, as it would be in the case of a building Commission. But the real advantage of carrying out the scheme by these means would lie in the fact that the work would be done honestly, and that what mistakes were made would only be those that experience would obviate. A few years' work in this direction would transform the whole of the east of London and remove from our country a condition of things which is a national disgrace. This it is no more paternal legislation than a great deal that we have enacted in Ireland in the relations between landlord and tenant, and certainly not more paternal than the law which forces every man to send his child to school.

THE PUBLIC HEALTH ACT, 1875.

FROM A SANITARY INSPECTOR'S POINT OF VIEW.*

By W. Wilkinson, Assoc. San. Inst., Chief Sanitary Inspector, Derby.

"The man who takes upon himself to pull down should be prepared to erect a better building."

My purpose is to point out the faults and failings of the Public Health Act, 1875, as they have been forced upon my notice during nearly ten years that I have had to study and administer the powers of this Act as a sanitary inspector. In accordance with the proposition at head, I shall suggest remedies for the defects noticed.

There ought to be one Public Health Act, applicable to the whole country alike, no division of urban and rural about it, and all the sanitary legislation of the past worth keeping should be embodied in that Act, so that we might find our powers at once without having to search for them in a score of bits of legislation. The whole of the matters relating to sanitary law need collecting, condensing, simplifying, and amending.

Sect. 23.—"Power of local authority to enforce drainage of undrained houses," gives the local authority power to enforce such drainage as, on the report of their surveyor, may appear to them to be necessary. Why the surveyor should be the only person authorised to make such report on a distinctly sanitary requirement is not clear. We, as inspectors, know perfectly well that scores of houses recently built have been found in a most wretched state as regards their drains and sanitary arrangements, although passed as fit for habitation by the local authority's surveyor, who, in many cases, never saw the houses at all. This most important work is, as we know full well, not done by the surveyor, but by some clerk, pupil, or foreman, totally incompetent for the duty, and as soon as the property comes under our inspection we have to take action to remedy the blunders which local authorities ought never to allow. No wonder property owners consider sanitary inspectors their worst enemies, while occupiers regard us as their best friends. It is impossible for anyone to keep pace with, and properly understand the details of, sanitary construction unless

* Read at the ordinary meeting of the National Association of Sanitary Inspectors, Manchester Centre, Dec. 21, 1889.

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it be his daily work, and I fearlessly say that the examination of houses, on the plans before building, during erection, and after occupation, cannot be put into better or more competent hands than those of the practical sanitary inspector, professionalism notwithstanding. To prevent sickness and death is the sanitary inspector's mission; the curing art, with its directly opposite interests, belongs to the medical faculty.

But to return to the law. Should there be no drain within 100 feet of a dwelling-house, the authority may require the owner to drain into a cesspool. Who is responsible for emptying this cesspool? or, if left for the filthy contents to percolate into the earth, wells, &c., or flow on the adjoining land, as was the case in the "good old days," who is responsible for damage or death? Is a cesspool part of the sewers of a local authority, or is it to be constructed and attended to entirely by the owner of property? These questions are not answered by the Act.

Sect. 40.—"Drains, water-closets, earth-closets, privies, ashpits, and cesspools to be properly constructed and kept." What is the precise scope of this section? Is the authority liable for death or sickness which may arise through the defective construction of any of these conveniences within their district? I think they are; and it is the duty of the Local Government Board, under sect. 299, to see that these important duties are not in any way shirked. If, then, an authority is by this section bound to see that all structural works are well executed, why does the Local Government Board not, and why does the Act not, give full powers to the local authority to insist on good and sound work and lay down a standard (not leaving the final discretion to untrained magistrates), or appoint trained officers with authority to administer these powers, as is done with other public Acts? Bye-laws passed by the Local Government Board referring to new houses do not apply to old ones, built before their passing. Why is this? Surely if careful construction is needed for new houses built under the best conditions, the same (or a more stringent bye-law) should be equally necessary and applicable to old houses built under less favourable circumstances. We should then have a fixed standard to work to and insist upon in all abatements of nuisances.

Sect. 41.—"Examination of drains, privies, &c., on complaint." Scores of defects occur which cannot be detected without opening up the ground, or exposing structural works, yet we can only make such an examination after "written application to a local authority by some person, stating that there is a nuisance on certain premises." Mark the words! This Act, which is supposed to be protective, requires that a nuisance, or a condition of things causing injury to health, must actually exist before we have any ground of action. The local authority (not their inspector) must give 24 hours' notice to occupier (or, in case of emergency, without notice) to enter and examine. How about an authority which meets once a month, as many do? Scores of cases of emergency might arise before all this legal red tape could be unravelled. This system might be tolerated when people were ignorant of sanitation, but is too clumsy and roundabout for this age. The sanitary inspector should have power to act at once.

Sect. 70—"Power to close polluted wells, &c." This most important section does not appear to come within the inspector's duties at all; it is nobody's child. The wording goes to show that the local authority can only proceed on a representation of any person, and, no officer being mentioned, and foul wells not being classed as nuisances, and no special powers of entry given, it is only fair to assume that the complaint or representation is a condition precedent to any action of the local authority, and any officer who enters premises to take samples of water is both trespassing and stealing, except on the authority of the Court as specified.

Sect. 78.—"Common lodging-houses." This section requires that before registration the house shall be inspected and approved by some officer of the local authority. So far so good; but why does it stop here? Many causes operate to render houses of this class unfit as lodging-houses, yet they cannot be closed as such unless dealt with as totally unfit for habitation. It may be said that bye-laws regulate common lodging-houses; so they do, but they only refer to the occupation, cleanliness, separation of sexes, proper use of appliances, &c., as clearly stated in sect. 80, and give no power over the repairs to building; these are structural, and belong to the owner; the magistrates are likewise powerless. Either the registration of premises as well as tenant ought to be for one year only, subject to renewal at discretion of the authority, or power should be given them to close it as a lodging-house should they consider it at any time unfit.

Sect. 84.—"Notice of fever, &c., in common lodging-house." Immediate notice of fever or infectious disease is to be given to medical officer of health, and to Poor Law relieving officer! Why to the latter, unless the case was that of a pauper, is a mystery; and why notice is not to be given to the inspector of common lodging-houses is a bigger mystery still. The medical officer of health, in nine out of ten urban districts, let alone rural, only appears on the scene about once a week, if that, and in some cases he does not even reside in his district at all. Why, then, require the notice to be sent to him? It should be compulsory that first notice be given to the inspector of common lodging-houses, and the inclusion of any other person is not needed; nay, may be, and has been, dangerous, because if two persons be named the keepers will certainly take the nearest, and their duty to report will be ended, and much mischief done before the report reaches the acting officer.

Sect. 89 requires amending, so that no part of a house shall be exempt from inclusion in the term "common lodging-house." Many rooms are reserved and let as furnished apartments to known prostitutes and unmarried couples, and you have no right of entry or control of the occupation if such rooms are exempted by the Act. It also requires clearly stating that the lessee of the whole house, and not a sub-tenant, is responsible.

Sect. 91.—"Definition of nuisances." What can I say of the conglomeration in this section? Much good has undoubtedly been done under it, but it has been in spite of the mixing and uncertainty, and not because the powers are clearly defined or understood. The first idea of the framers of the Act appears to have been expressed in the term "nuisance" (offensive or annoying), and that the second part, "injurious to health," was an afterthought. To sum up the elaborate definition, this section takes infinite pains to tell us that a nuisance is a nuisance, and there leaves us. Let me point out again, what has been frequently decided, that the

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term "nuisance" or "injurious to health" contains a double charge, one only of which can be preferred in a summons, or your proceeding is void by duplicity. No part of the Public Health Act, except, perhaps, that relating to paving, has supplied a more profitable wrangling ground for the legal fraternity than this—to settle what is or is not a nuisance, and the intention of the framers of the Act. This section alone, and cases dealt with under it, would supply enough matter for a series of papers and discussions, but my remarks hereon must be brief. A very clear definition ought to be given as to the class of nuisances to be dealt with by inspectors on behalf of the local authority as public, the remainder being left to be put in force by the parties aggrieved, as private nuisances. At present, action is often taken by a local authority on behalf of one owner as against another, on the ground that the conditions existing are prejudicial to health, such conditions often being due to ignorance or folly displayed in the construction of adjoining premises. Again, there are many things prejudicial to the health of the public which are left alone, because no sufficient line is drawn between public and private nuisances, and many more which are left on account of personal and selfish considerations. This section is most often used as between tenant and landlord, "but don't let the landlord know that I've complained." We know what this means.

It should be made quite clear whether the term "nuisance" includes all mere annoyances, and structures dangerous to life or limb by reason of decay or defective construction, or whether, as the title of the Act certainly implies, it deals only with matters affecting health. And what about matters likely to be injurious to health? Are we to leave these till some mischief has been done?

Overcrowding of houses is regarded as a nuisance, but the inspector can be refused admittance until he obtains a magistrate's order. Sect. 102 deals with this order, which is granted to admit from 9 A.M. to 6 P.M. (except in case of a business). Overcrowding of a house, unless it was due to taking in lodgers for profit, cannot be called a business, and we have, therefore, no authority whatever to enter and examine as to overcrowding during the only time when such could be detected. Overcrowding should be dealt with summarily, and not require notice at all, but I shall mention this question of notice-giving further on. More definite powers of entry at any time, day or night, should be given, as there are undoubtedly hundreds of houses in Lancashire and the large towns of England to-day which are more overcrowded, and in worse sanitary condition in consequence, than the common lodging-houses.

As to factory or workshop. I should like to state here that if bakehouses are to be effectually supervised, the stupid arrangement in the Factory and Workshop Act, 1883, whereby no one but the medical officer of health has power to enter or carry out the Act, must be amended, and power given to the sanitary inspector also.

"Smoke nuisance." Why on earth the term "black" smoke should be used in this section I do not know, as most people would say smoke of any shade was a nuisance. This word should be kicked out, to enable us to deal with any chimney (not being the chimney of a private dwelling) sending forth smoke in such quantity as to be a nuisance, and power should be given to deal with any chimney (including all chimneys of private dwellings and buildings of every description) sending forth smoke at any elevation below the highest point of roof of adjoining building, as there are thousands of short chimneys to wash-houses, greenhouses, workshops, back kitchens, &c., which are an intolerable nuisance; they prevent the opening of windows and doors of adjoining houses for ventilation for days together, and many being chimneys of private dwellings, we cannot touch them under the present Act. Another blot on the smoke question needs entirely removing, viz. clause 334, which is now understood to totally exempt chimneys of iron furnaces from the operation of smoke clauses.

Sect. 92.—"Duty of local authority to inspect district." Why is it not the sanitary inspector's duty to inspect the district and take action at once, as many other inspectors have power to do under Public Acts? This is where the biggest screw is loose in the Public Health Act, 1875, and is one of the principal points I commend to the consideration of our legislators. How would inspectors of factories and others fare if put under the control of the law-breakers?

Sect. 93.—As to giving information of a nuisance requires the inspector substituting for the local authority, as the most enlightened authorities of to-day regard this routine, reporting, &c., as so much useless red tape, only calculated to injure the public interest and safety, and as serving no useful purpose. This section defines very clearly the fettering of the sanitary inspector, who has hitherto been the chief friend, adviser, and assistant of the public in all sanitary details. Let the public know, then, what a glorious provision this Public Health Act makes for their safety! So far as the nuisance clauses are concerned, your sanitary inspector, whom you fancied was almighty to remedy conditions threatening or prejudicial to health, has no more power than is given to any policeman or relieving officer; his business is simply to inspect and report to the local authority. Sect. 94 plainly states that it is the local authority who serve the notice, and sect. 95 states that if default be made in complying, they, the local authority, shall cause complaint to be made to a justice, so that no single step can be taken by an inspector without the sanction and instructions of his authority, which is frequently composed of jerry-builders, large property owners, and others whose immediate interest it is to retard sanitary work, so as to save their own pockets or those of their friends. And yet some people wonder why we do not make better sanitary progress. The wonder is we make any.

All sanitary authorities are not of this type, I am happy to say, as I have the pleasure of serving a corporation who are alive to the best interests of their town, and take an enlightened and intelligent view of their duties; but my case, unfortunately, is an exception and not the rule.

The principle laid down in sect. 94 of taking the person receiving the rents as the owner, and making him responsible for all requirements of a structural nature, is most excellent, and I hope will not be altered or varied; but while it is necessary to deal by notice with regard to works requiring alteration or construction, so as to give the owner a chance to do the work, it is not necessary to deal by notice with any nuisance which is not caused by the want, or defective construction of any structural convenience. This is a point I especially want to emphasise. Let me put it shortly. All owners' nuisances are in connection with matters structural.

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All occupiers' nuisances arise from careless or wilful misuse, and ought to require no notice whatever, but be dealt with summarily. I can illustrate what I mean on the smoke question. An owner of a mill or works has not sufficient, or efficient boilers, or appliances for consuming the smoke generated on his premises, he is at fault, and should be dealt with by notice; but when he has made all needful provision, and the smoke is caused by the carelessness or laziness of a fireman, it ought not to be necessary to go the whole rig and serve the workman with a notice to abate, or he could be careful for a period of six months and then laugh at you till you had served a fresh notice. An owner of property has provided boxes for the ashes and dry refuse made on the premises, but the tenants make them receptacles for all kinds of liquid filth; or he has provided good drains with properly trapped inlets, but by not attending to the traps and grates they become choked and a nuisance caused, we ought to be able to deal with occupiers at once in such cases and never have to report to local authority, serve notice, &c. &c. To talk of protecting the public health at this rate in the nineteenth century is ridiculous. The remedy for all nuisances of a non-structural character is summary proceedings, and in a vast number of cases this would work a more speedy reformation than any other course I could suggest. If the proposition to give the inspector the power with regard to nuisances hitherto exercised in the name of the local authority is too sweeping, then by all means let him have power to deal summarily with all nuisances of a non-structural character, and to serve legal notice at once for abatement of all structural nuisances, and on the approval of the local authority such notice to carry a cumulative penalty from the date of its expiration until the necessary work be done.

Sect. 96.—"Power of Court." No doubt some here have been puzzled to understand the exact meaning of "an order prohibiting the recurrence of the nuisance." You will notice that the order for abatement and doing of necessary works is mentioned, and this meets the case where the nuisance still exists; and the order probibitng the recurrence, and the execution of necessary works for this further purpose, applies to the case where the nuisance has been abated, but not satisfactorily, and is therefore likely to recur. The distinction here drawn may appear fine, but is nevertheless important, and every order to abate should be made an order to prohibit the recurrence so that proceedings can be taken at any time thereon and not have to again go through the routine and serve notice.

Sect. 97.—As to closing of house unfit for habitation on account of nuisance, is not sufficient in its present form as a ground of general action for the closing of unfit habitations. A difficulty arises at once as to what alterations can be fairly termed necessary as remedies for nuisances. Similar power is required to that now in force in many towns through bye-laws, but as before stated these powers in building bye-laws only refer to houses built since their passing, and not to old ones.

Sect. 114.—"Offensive trades." Power ought to be given to justices to compel the removal of any offensive trade from the neighbourhood of dwellings, &c., when proved to be a public nuisance, no matter how long it may have been established, or such trades, more than any other, ought to be subject to an annual license, and to cancellation if found to be a nuisance.

Sects 116 to 119.—"Unsound meat, &c." A grievous omission was made when cheese and eggs were not brought within the scope of these sections. Power ought to be given to cover any article used or intended for the food of man, and with regard to meat or flesh there ought to be a penalty for selling any meat which had not been killed in a duly registered slaughter-house, where there would be a better chance of regular inspection.

I shall pass over the infectious clauses, as they have on the whole been found to work satisfactorily.

Sect. 169.—"Power to provide slaughter-houses." This power, given to urban authorities only, is permissive, but it ought to be compulsory. Any inspector of experience will tell you that private slaughter-houses spread over a town are a nuisance, and render inspection and detection of unsound meat anything but an easy matter. It ought to be compulsory on every urban authority to provide public slaughter-houses, and be unlawful for a private one to exist within their district. Failing this the whole of the sections as to slaughter-houses in the Public Health Act, and those of the Towns Improvement Clauses Act, 1847, incorporated therewith, should be swept away and a fresh start made, as I have never found a single person yet to understand them, or, having done so, could point to a place where they were carried out. Had I the time I could show the uselessness of these clauses. Why did our legislators not give power to rural authorities to regulate slaughter-houses? This is a very serious omission, as the close inspection in urban districts has driven slink butchers and others to the outskirts of the towns, where they dress their rubbish, and having removed all vital organs and traces of disease, they send the best into the public markets, and dispose of the remainder to potted meat and sausage makers, or send the whole lot off by rail to other towns. This trade is largely carried on in our rural districts, where the inhabitants are allowed to slaughter animals where they please. The work of rural inspectors in this matter of meat inspection and the supervision of dairies is most important. I am pleased to find that one corporation has realised the importance of properly controlling slaughter-houses, and have had some excellent powers embodied in their Corporation Act. Let me, therefore, before leaving this important matter, which requires more ample time and treatment than I have been able to give, lay before you some of the provisions in "The Barrow-in-Furness Corporation Act, 1868," for the regulation of slaughter-houses, powers which ought to be in force in every district in the kingdom.

"The Corporation may grant licenses and demand a sum not exceeding 5s. for any such license for twelve months, and in the like proportion for any shorter period."

"They may, by order, revoke or suspend the license for any slaughter-house, when, in their opinion, the same is a nuisance."

"If any licensed slaughter-house is not used as such for the space of three months, the license thereof shall be deemed to have lapsed."

"This license shall be given up to be cancelled upon three calendar months' notice by the Corporation, without payment of any compensation by them."

I would add to these a clause prohibiting the dressing, for human food, of any carcase or meat in a knacker's yard, or the dressing in any other place than a knacker's yard of any carcase or meat not

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intended for the food of man, such a provision being all the more necessary now that horse-flesh is recognized by law as an article of food, so that any such be not dressed and prepared for human consumption amid the filthy surroundings of a knacker's slaughter-house and yard.

Sect. 189.—"Appointment of officers of urban authority." "Every urban authority shall from time to time appoint fit and proper persons to be medical officer of health, surveyor, inspector of nuisances," &c. First let me call attention to the fact that an urban authority can only appoint one inspector of nuisances, this point having been frequently argued and settled, and the fact of the word inspector (in the singular) being mentioned in this section is intensified by the provision that a rural authority, under sect. 190, may appoint as many inspectors and also assistants as they like. How on earth the framers of the Act expected one man to inspect the whole of a district like Manchester, Liverpool, or Birmingham, is simply beyond comprehension, yet in the last mentioned town, quite recently, the justices held, in a prosecution for bad meat, that the assistant-inspector had no authority except through the chief inspector, and dismissed the summons. Any local authority ought to be at liberty to appoint as many officers as they please, and define the powers and duties of each, or, which would be infinitely better, let the Act or the Local Government Board define the duties so that the work of five men should not be demanded from one. The section says, fit and proper persons are to be appointed. Now the Local Government Board are thus clearly liable if an improper or unfit person be appointed as officer in any district, and yet, if time permitted, some curious revelations might be made, not as to how best to carry out the intentions of the Act, but, how best not to do it.

A word or two as to the title "Inspector of Nuisances." What's in a name? A rose by any other name would smell as sweet, but that is no reason why a greyhound should be called a pig. There was evidently more than a suspicion in the minds of those who gave us this name, that it was not quite the thing, because we find the title of sanitary inspector given in the Nuisances Removal Act, 1855, and again in the Artisans' and Labourers' Dwellings Act, 1868, the designation sanitary inspector is very amply explained as referring to us and our work; and as the term nuisance has now come to mean, more than ever it did, a state of things prejudical to health, and all matters relating to health are designated sanitary, and we, more than any other class of men on the face of the earth, are concerned with the study and administration of sanitary science and law, the term "inspector of nuisances" is certainly a misnomer, and we should be uniformly designated as sanitary inspectors, which we certainly are now in everything but name. As to qualification for the office I should like to say much, but will content myself with saying that it is absolutely necessary that only qualified men should be appointed, and that it is the duty of our law-makers to say who shall be the certifying authority, or devise means by examination or otherwise to secure this end, and I know we shall be ready and willing to render any assistance we can to secure, for ourselves and the public, a minimum standard of efficiency. I also hope that our personal side of the case will be considered, and such provision made in the matter of payment for the education and skill required as will make it worth while for inspectors to attain the highest proficiency in sanitary science and construction.

A few words with regard to our position in relation to the medical officer of health.

As health officers are making such a stir just now that sanitary inspectors should be entirely under their control, I should like to ask them to point out any public benefits to be derived from such an arrangement; as the duties required of a medical officer, and which cannot be equally well performed by an intelligent sanitary inspector, are very few, and I cannot but express my surprise that they should want to climb down and occupy the position of inspectors. The Public Health Act recognizes their true position as consulting officers and advisers of the local authority, and it is altogether *infra dig.* to think of their undertaking or interfering with detail sanitary administration. They are medical experts to deal with hospitals and diseases, and to be called in or consulted by the inspector "whenever it appears to him that the intervention of such officer is necessary," as defined by the Local Government Board's instructions to inspectors, and I hope the legislature and the public will fully consider this matter in its economic and general bearing before any alteration be made.

Let me further elaborate some of the points mentioned. I have referred to the granting of licenses for common lodging-houses, offensive trades, and slaughter-houses, being entirely in the hands of local authorities and subject to cancellation by them at any time. A license granted by an authority for any purpose, to any occupier of premises, does at once confer an advantage, and is of considerable money value to such person, and indirectly to the owner of the premises as well, yet the public ought not to suffer in the slightest degree for the benefit of any man (more particularly as few if any of the licenses are paid for), and the moment their interest is interfered with, the local authority, who certainly created the increased value by granting the license, and are the custodians of the public health, ought to have full power to withdraw the license at once, which would simply reduce the premises to their normal value.

Again in the matter of nuisance abatement, let me repeat that the remedy for all nuisances of a non-structural character ought to be summary, with the power given to the sanitary inspector to proceed at once. This is no new idea, and I am surprised that in such matters it has not been put in force long ago. As the law stands now, and has done for over forty years, if you let off a squib or cracker, shake a door mat (after 8 A.M.), let your chimney take fire, or do a host of other paltry things in any street, you are liable to summary proceedings and 40s. and costs. How much more then ought matters of greater importance to life and health be the subjects of such prompt and salutary action.

With regard to structural defects and nuisances, there certainly requires a notice to give the owner time, but when a drain is choked or defective, a broken soil-pipe, or waste pipe is giving a constant supply of deadly sewer gas to a dwelling, it is ridiculous to have to wait a month for the sanction of the local authority before a single legal step can be taken. If the inspector had power to serve a legal notice for the necessary work to be done in a stated time, such notice on approval of the local authority to carry with it a heavy cumulative penalty for neglect, the inspector would be respected and obeyed, and further proceedings would rarely be necessary.

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I must ask you to excuse the lack of literary excellence in my production, as I have cared first and foremost to lay before you what I consider to be stubborn facts and matters pertaining to the vital interest of the British public, and if I have in so doing been of any service I have my reward.

PHYSICAL TRAINING FOR GIRLS.

By Sara A. Burstall, B.A.

Among the many extraordinary and mischievous prejudices which have prevailed on the subject of women's education, perhaps none is more remarkable or more mischievous than that against their physical training. The most elementary ideas on the question of women's work and position might have suggested that, above all, the first thing for the well-being of the race was that the mothers of the next generation should be as healthy and as well developed as the available spare energy to be given to education would allow. And yet history presents us with only one nation—Sparta—where this truth was fully recognized, and where the girls went through a systematic physical training, intended primarily to perfect them for their future work in the State in this respect. It is lamentable that this early example should have been so completely ignored ever since; nay, habits of education, dress, and living, absolutely injurious to the health of women, especially in their maternal capacity, have been enforced upon them, and adopted by them under the influence of vanity, masculine tastes and jealousy, so-called propriety, and often absolute indolence. In England, where the old Teutonic ideas about women have always had their influence, some degree of open-air life and exercise for women has generally been customary, and to this is doubtless to be attributed in part the fine physique of the race. In the present day, when scientific hygiene is not only studied but believed in, and when the laws of heredity are becoming a realised truth, the subject of physical development naturally receives some degree of attention.

Thus, the importance of this part of a girl's education is now being more fully recognized, and most of our better class schools give it a place in their curriculum, although rarely such a one as a true theory of education demands. Too often the training of the body is sacrificed either to the acquiring of so-called accomplishments, as in the older type of boarding schools, where the ideal of healthful activity was too often frowned down, or, on the other hand, to the demands of examinations, and to continuous mental effort, as with some of those who enter most completely into the new system of women's education. In most of the high schools, however, a wiser spirit now prevails. Public feeling, which is becoming alive to the necessity of healthy physical development among girls and women, no longer considers that games and calisthenic exercises are unwomanly, and thus the work done in the schools and the demand outside act and react on each other for good. Within the next few years it is highly probable that parents will come to inquire first, when they think of a school for their girls, what are its advantages for physical training. Then the girls' schools in return will enlarge their facilities.

What each school can do varies, of course, with circumstances, locality, class, wealth, and a dozen other conditions. One of the first schools in Scotland—St. Leonard's, St. Andrew's—has a private cricket-field, where the girls play matches, the eleven of one house against that of another. The effect on the spirit of the school and on the health of the girls is, we learn on good authority, excellent. The Edgbaston High School, Birmingham, has two cricket elevens, headed by two of the form mistresses; these play twice a week during the summer, and at the end of the season they have a match with an eleven of old girls. Many of the provincial high schools have tennis-courts, and regular calisthenic teaching is everywhere becoming more and more general. In London, however, the problem is more difficult. We shall, therefore, give a detailed account of what is done in a London school, and have selected one of the oldest and best known, the North London Collegiate School for Girls.

The conditions here are, first, very limited area of ground; second, a day school whose hours are 9.15 to 1.30 for the great mass of the girls, many of whom live at a distance; third, an endowed school, with a magnificent building, and large numbers. The first two conditions make tennis, cricket, and other voluntary games arranged and carried out by the pupils themselves, as in boys' public schools, extremely difficult either through limit of room or limit of time. The third, however, allows a great deal to be done, especially more organized physical training as part of the regular school work. The school has an exceptionally large gymnasium, lofty, well-lighted, and warmed, paved with wooden blocks, and never required for any other than its own purpose, as the school possesses also a hall for meetings. The resources of the school too, allow of a special and more complete organization for calisthenics, without affecting the rest of the staff.

At an early period in the history of the school the subject received some attention; as much, perhaps, as was possible in the then condition of public feeling and of teaching power, and simple calisthenic exercises, in time to music, directed by class teachers, formed a regular part of every day's work, the time given being about fifteen minutes. In the summer months the swimming baths in the neighbourhood, which were open on Saturday mornings for women, were attended by a school teacher and a swimming mistress, and the girls were encouraged to learn and practise swimming, a prize being offered by the school. This plan has had excellent results; many old pupils, having had their attention directed to the question, have become expert swimmers, and have taught and influenced others. Several have won prizes in public competitions. This arrangement about swimming still continues, but in all other respects very much more has of late years been done.

From the time that the new building was occupied in 1879, extra classes were held in the afternoons for regular gymnastic practice under special teachers, but, in the summer of 1883, a new arrangement was made, and calisthenics took its place by the side of the other subjects of education in the regular morning work, with special teachers trained for the purpose. Miss Chreiman's system was the one introduced, the characteristic features of which are the musical accompaniment and the exercises with balls, intended to cultivate grace and ease of movement. Since then Miss Chreiman's assistants, or teachers trained by her, have attended the school twice a week; each class has a lesson of half an hour, two classes—*i.e.* 60 girls—being taken together. On the other three days, the class teachers conduct the simpler exercises

as before, for a quarter of an hour. On the special days the lesson is somewhat as follows:—Marching, exercises with balls or wooden dumb-bells, or free exercises, bar bells, movements of the head, &c.; then more elaborate marching and running, the lessons being varied, and more difficult exercises introduced as the pupils improve. Anything of a military style is carefully excluded. The girls wear their ordinary dress, though many prefer to have a loose bodice on these days, and to abandon stiff collars. It is expected that if corsets are worn these should be laced with elastic, but the school authorities do not insist on any rule, except that high heels are forbidden, as at all times within the school house.

Besides the specialist teachers, there is a lady on the staff present during the lessons. It is part of her work to see that, from time to time, girls who may not be well enough to take the exercises should recline on couches provided for that purpose; and at any time a girl who brings a note from home is entirely excused from calisthenics that day, and is also made to lie down. Great importance is attached to this rule, as providing against any possible overstrain, and, as a matter of fact, the girls do avail themselves of the occasional exemption. A general exemption is only allowed, for medical reasons, after consultation between the head mistress and the parents, and such cases are comparatively rare.

The whole is under the superintendence of a qualified woman doctor. Miss Cock, of the London School of Medicine for Women, now holds the post; she sees every new pupil some time soon after entering the school, and should she then think there is tendency to spinal curvature, a request is sent to the girl's mother to allow a more formal medical examination. On the result Miss Cock may advise special medical exercises, more particularly for spinal weakness, on Dr. Roth's system. For these the girls return in the afternoons, no extra fee being charged. Some girls come as often as four afternoons a week for three-quarters of an hour each time, others less frequently. The staff for this consists of a superintendent and two teachers. Reclining in a very careful position is an essential part of this treatment. Rotation of the leg from the hip joint, breathing exercises, movements of the head, swimming movements, &c., are ordered by the medical superintendent to suit each case. There is no music, but counting aloud is insisted upon, as strengthening the lungs, and providing against over-exertion. After a term or so of this work, considerable improvement is generally noticed, and then other exercises with the horizontal ladder, parallel bars, horizontal bar, &c., are ordered.

In the general arrangements of the school work, great care is given to sanitary questions. All wet outdoor clothes, boots, &c., are dried in a hot room while the lessons are going on, so that the girls on leaving school do not put on wet garments, and no girl whose dress is wet is allowed to take her place in class until it is dried at one of the open fires.

Every girl's eyesight is tested, and, if necessary, a report on it sent home.

We need not say anything here on ventilation and other general rules of school hygiene, as these are observed in most new buildings. In this school the class-rooms are warmed with open fires, and the hall, staircases, &c., with hot air. It may thus be seen that a great deal is done by the authorities for physical training and development.

Until the last year or so, however, there seemed but little inclination on the part of the girls to take part in any games, even when the opportunity was offered during fine weather in the playground at recess, and although three fives courts had been built by the governors.

But recently an interesting movement has sprung up among the elder pupils, for the formation of Games Clubs, form by form, to play on the three days in the week when they do not have the regular calisthenic lessons. The girls, whenever the weather allows, go out in the playground at recess, for about twenty minutes, and join in lively games of rounders, prisoner's base, &c., while the fives courts are always filled. A fives tournament has lately taken place, and the championship of the school has been decided. Squash rackets, played under cover in the gymnasium in the dinner hour, is very popular among the girls who stay for extra classes in the afternoon.

This enthusiasm has this last term culminated in an athletic competition, which has aroused considerable interest and excitement. Sixteen girls who do not wear corsets challenged any sixteen out of the whole school to a competition under the following heads: High leap, long leap, running, vaulting, and tug-of-war.

In the one kind of leaping, the advantage went to one side, and in the other kind, to the other, as the following table will show:—

	Corsets.		*No Corsets.*
High Leap:	ft. ins.		ft. ins.
Champion	4 2	...	4 1
Average	3 7	...	3 6 1/11
Long Leap:			
Champion	10 6	...	12 0
Average	9 1¼	...	9 4 1/11

In the vaulting it was not possible to make a numerical comparison.

The tug-of-war was perhaps the most striking event. It should be borne in mind that the corset wearers had a much larger number to select from, and that, *per contra*, three of the teachers took part in the tug-of-war on the hygienic side, with, however, the approval of their competitors, who could also have had teachers with them, only they preferred not to do so. The result was a remarkable triumph for rational dress; this is perhaps to be attributed to the development of the pectoral and dorsal muscles and the freedom of movement backwards from the waist, which come naturally from not wearing stays.

The running competition was somewhat of the nature of a scientific experiment, only it is to be feared that the numbers were not sufficiently large to eliminate accidental circumstances. Several girls had colds, and thus the pulse and respiration rates are not normal. The tests were conducted by Dr. Wilberforce Smith and Dr. Collins. They measured the breathing capacity, pulse, and respiration rate of each girl before and after the running, the course being nine times round the gymnasium, that is, a little over one-third of a mile. None of the girls were at all what could be called tight laced; this was proved by the test for oval waists. In the artificial round waist, the measurements of the waist diameter from back to front, and from side to side, are nearly equal. The smaller the fraction expressing the ratio these bear to each other, the greater is the ellipticity. On the hygienic side this fraction was ·87; on the other ·86. Thus, the girls who wore corsets had waists even slightly more oval than those of the others, and therefore could not have deformed the natural figure.

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The ratios of the respiration rates before and after running were much the same in both cases, with a slight advantage to the hygienic side; this was reversed for the pulse rates, which were more raised by the effort in the latter case. But, as was said above, these two tests were somewhat affected by accidental causes; for on both sides the pulse rate, after running, was considerably less than in some experiments recently made in America. The spirometer measurements were the most important, and were compared with the averages for women, taken by Mr. Galton, at the Health Exhibition. Both averages were above Galton's, but for those who did not wear stays the difference was considerable, rather more than 27 cubic inches more after running, and 23 cubic inches more before running. For the wearers of corsets the difference was only $\frac{3}{10}$ cubic inches more than Galton's average. This result on the breathing test, points the same way as that in the tug-of-war, viz. to a greater development of the lower part of the chest, as a consequence of the entire absence of the corset. This has its interest in connection with the recent discussion in the *Contemporary Review*, between Sir Morell Mackenzie and Mr. Lennox Brown, as to what is called abdominal breathing in women, which method is that taught in the breathing exercises practised in the singing and calisthenic classes in the school. It should be noted that these competitions took place on different days, after an examination of all competitors by the lady doctor, and that the whole number were not expected to take part in each competition. These precautions were to prevent overfatigue or injury.

Such a competition as the one we have described has an important bearing on the question of physical training, especially in a large school. The attention of every girl is aroused; she sees the heads of the school taking part, and probably wishes she could do the same, and thus comes to care more for games and exercise. One of the greatest obstacles has been in the past the indifference of girls themselves, especially in London, and obviously it is very difficult to make them use their muscles unless they choose. For this and other reasons free games in the open air are much to be preferred to compulsory exercises; the effects on moral and intellectual growth of the remarkable outburst of enthusiasm for games in the school we have described, has already been noticed. The girls chiefly concerned in the competition and games have made a better average record in the term examinations than has been the case for some years, and the teachers notice the increase of brightness and intelligence in the work done, after the twenty minutes in the playground.

In conclusion, we may hope that in time games of a suitable character, and under proper safeguards, may become in girls' schools something of what they are among boys, as a means of physical and moral training. The dangers so vividly put before the public in the recent discussion in the *Times*, would not, according to the opinion of teachers of experience, be likely to arise among girls, as the tradition of the schools is different, and interest in school work much more general. The health and vigour of Englishwomen, which has in the past done so much for the nation, would not then, as some fear, be affected by the new movement in women's education, but rather, as a result of the fuller scientific knowledge and the more liberal ideas now prevailing, increase; and thus give us an even better type of complete and beautiful womanhood.

COMPULSORY NOTIFICATION OF INFECTIOUS DISEASES.

We append a list of local sanitary authorities that have adopted the Infectious Disease (Notification) Act, 1889, since our last issue. Taking this in connection with the previous lists (pp. 211 and 260) it will be seen that the system of compulsory notification of disease has, at the time of writing, been voluntarily adopted in some 315 urban, 258 rural, and 9 port districts, having an aggregate population of 8,533,808. If to this be added the 3,828,824 residents in the 59 towns where the system is in force under local Acts, and the 3,816,483 residents in the metropolis where the Act came into force on Oct. 30 last, it will be seen that already, within five months from the passing of the Act, upwards of 16,000,000 persons, or two-thirds of the entire population of England and Wales, are under the system of compulsory notification.

Name of Authority.	Population (1881).	Date on which Act comes into force.
Urban Authorities:—		
Aberystwith	7,133	Jan. 1, 1890.
Abram	2,638	,,
Acton	17,126	Jan. 15, 1890.
Alverstoke	21,581	Jan. 1, 1890.
Andover	5,658	Feb. 1, 1890.
Barnard Castle ...	4,544	,,
Barnsley	29,790	Feb. 6, 1890.
Beeston	4,479	Jan. 15, 1890.
Berwick-upon-Tweed...	13,998	Jan. 13, 1890.
Biddulph	5,557	Jan. 1, 1890.
Billinge	3,882	Jan. 18, 1890.
Bilston	22,730	Feb, 1, 1890.
Birkdale	8,705	Jan. 20, 1890.
Bradford (Wilts.) ...	4,922	Feb. 1, 1890.
Bristol	206,874	Feb. 12, 1890.
Canterbury	21,704	Jan. 20, 1890.
Chelmsford	9,885	Jan. 1, 1890.
Chepstow	3,591	Jan. 18, 1890.
Christchurch (Hants)...	3,260	Jan. 1, 1890.
Clevedon	4,869	,,
Clitheroe	10,176	,,
Cuckfield	1,713	Jan. 15, 1890.
Dawley	9,200	Feb. 1, 1890.
Dawlish	3,977	,,
Denbigh	6,535	,,
Devizes	6,645	Jan. 13, 1890.
East Barnet Valley ...	5,809	Jan. 1, 1890.
East Cowes	2,512	Feb. 1, 1890.
Ebbw Vale	14,700	March 1, 1890.
Eton	3,464	Jan. 15, 1890.
Fairfield	1,464	Jan. 1, 1890.
Featherstone	5,901	Feb. 10, 1890.
Fleetwood	6,733	Jan. 23, 1890.
Goole	10,418	Dec. 9, 1889.
Grasmere	684	Dec. 12, 1889.
Hampton Wick ...	2,164	Feb. 1, 1890.
Hanley	48,361	Jan. 13, 1890.
Hanwell	5,178	Feb 1, 1890.
Havant	3,032	,,
Haverhill	3,685	Jan. 8, 1890.
Haworth	3,816	Feb. 1, 1890.
Hay	1,916	,,
Higham Ferrers ...	1,468	Jan. 13, 1890.
Hitchin	8,484	Feb. 1, 1890.
Hull	165,690	,,
Keswick	3,220	Jan. 8, 1890.
Kirkham	3,840	Jan. 31, 1890.
Knighton	1,720	Jan. 1, 1890.
Leamington	22,979	,,
Leckhampton	3,501	Feb. 1, 1890.
Leek	12,863	,,
Lichfield	8,349	,,

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Name of Authority.	Population (1881).	Date on which Act comes into force.
Urban Authorities:—		
Long Eaton	6,217	Feb. 1, 1890.
Loughborough... ...	14,803	March 1, 1890.
Lydd	1,887	Jan. 1, 1890.
Maldon	5,468	Dec. 17, 1889.
Malvern Link	1,800	Jan. 1, 1890.
Market Harborough ...	5,351	,,
Mirfield...	11,508	Feb. 1, 1890.
Moss-side	18,131	,,
Newbold & Dunston ...	6,158	,,
Newmarket	5,093	Jan. 1, 1890.
Newport (Mon.) ...	35,313	Feb. 1, 1890.
Normanton	8,038	Jan. 31, 1890.
Oldbury	18,841	Jan. 12, 1890.
Ossett-cum-Gawthorpe	10,957	Feb. 1, 1890.
Peterborough	21,228	Feb. 3, 1890.
Pontefract	8,798	Feb. 1, 1890.
Ramsgate	22,683	,,
Reigate	18,662	Jan. 1, 1890.
Ross	3,724	Feb. 8, 1890.
Rothwell	6,226	Jan. 1, 1890.
Rowley Regis	27,385	Feb. 1, 1890.
Royton	11,433	,,
Ruskington	1,191	Jan. 13, 1890.
St. George	26,433	Jan. 11, 1890.
St. Mary Church ...	5,759	Feb. 1, 1890.
Sandown	3,120	Jan. 1, 1890.
Seaford...	1,887	Feb. 1, 1890.
Sevenoaks	6,296	Jan. 1, 1890.
Shrewsbury	26,478	Jan. 20, 1890.
Slough	5,095	Feb. 1, 1890.
Smethwick	25,084	,,
Southborough	3,870	Jan. 31, 1890.
Spennymoor	5,917	Jan. 1, 1890.
Stafford	19,977	April 1, 1890.
Staines	4,628	Jan. 1, 1890.
Stocksbridge	4,660	,,
Stoke-upon-Trent ...	19,261	Feb. 1, 1890.
Stourport	3,357	Jan. 8, 1890.
Stretford	19,018	Jan. 4, 1890.
Sutton Coldfield ...	7,787	,,
Teddington	6,599	Feb. 1, 1890.
Tenby	4,750	Jan. 16, 1890.
Uckfield	2,146	Feb. 1, 1890.
Walton-le-Dale ...	9,286	,,
Walton-on-the-Naze ...	1,371	Jan. 1, 1890.
Ware	5,277	Jan. 16, 1890.
Warley	3,211	Dec. 23, 1889.
Warminster	5,640	Jan. 1, 1890.
Warwick	11,800	,,
Wellington (Som.) ...	6,360	Feb. 1, 1890.
West Bromwich ...	56,295	Jan. 9, 1890.
Westhoughton... ...	9,197	Jan. 11, 1890.
Weston-super-Mare ...	12,884	Jan. 1, 1890.
Whitehaven	20,000	Feb. 1, 1890.
Wirksworth	3,678	,,
Witham	2,966	,,
Withington	17,109	Jan. 1, 1890.
Wolborough	7,662	Feb. 1, 1890.
Woodford	7,154	Jan. 1, 1890.
Rural Authorities:—		
Alcester	17,387	Dec. 16, 1889.
Atherstone	14,419	Feb. 1, 1890.
Austell, St.	26,354	,,
Barnet	6,578	,,
Barnstaple	18,456	Jan. 1, 1890.
Beaminster	11,467	,,
Berkhampstead ...	10,737	,,
Bicester...	10,551	Dec. 28, 1889.
Bishop Stortford ...	15,097	Feb. 1, 1890.
Blaby	21,853	,,
Blean	12,493	Jan. 1, 1890.
Bradfield	17,972	Dec. 2, 1889.
Brecknock	4,226	Jan. 1, 1890.
Bromsgrove	11,174	Feb. 4, 1890.

Name of Authority.	Population (1881).	Date on which Act comes into force.
Rural Authorities:—		
Bromyard	11,054	Jan. 1, 1890.
Buntingford	6,032	Feb. 1, 1890.
Camelford	7,605	,,
Cardiff	16,964	,,
Catherington	2,747	,,
Chapel-en-le-Frith ...	11,997	,,
Chelmsford	23,086	Jan. 1, 1890.
Chester-le-Street ...	43,352	Feb. 1, 1890.
Christchurch (Hants)...	12,597	Jan. 1, 1890.
Clitheroe	13,326	Feb. 1, 1890.
Coventry	3,000	Jan. 1, 1890.
Crickhowell	7,709	Feb. 1, 1890.
Dolgelly	11,213	April 1, 1890.
Droitwich	13,737	Dec. 9, 1889.
Erpingham	15,338	Feb. 1, 1890.
Farnham	15,752	Jan. 1, 1890.
Fordingbridge	6,234	Feb. 1, 1890.
Freebridge Lynn ...	12,234	,,
Gloucester	10,339	Jan. 1, 1890.
Goole	9,106	Dec. 9, 1889.
Guildford	29,388	Jan. 1, 1890.
Halifax	9,229	,,
Hardingstone	8,532	,,
Havant	5,640	Feb. 1, 1890.
Hereford	21,705	Jan. 8, 1890.
Hinckley	9,729	Feb. 1, 1890.
Lexden and Winstree ...	21,683	Jan. 1, 1890.
Leyburn	7,653	Feb. 1, 1890.
Lichfield	22,372	Jan. 1, 1890.
Loddon and Clavering	13,646	Feb. 1, 1890.
Lunesdale	7,132	Jan. 1, 1890.
Luton	10,913	Jan. 20, 1890.
Newark...	16,598	Feb. 11, 1890.
Newbury	11,183	Jan. 1, 1890.
Newport (Salop) ...	12,308	Feb. 10, 1890.
Northampton	9,312	Jan. 7, 1890.
North Witchford ...	4,562	Feb. 1, 1890.
Ongar	10,669	,,
Ormskirk	25,782	Jan. 1 1890.
Ouseburn, Great ...	6,919	,,
Pershore	13,560	Jan. 14, 1890.
Peterborough	20,276	Jan. 1, 1890.
Petersfield	10,236	,,
Prestwich	17,606	,,
Richmond (Yorks) ...	8,956	Feb. 1, 1890.
Romney Marsh ...	6,059	,,
Romsey	6,396	,,
Ruthin	10,877	,,
Saffron Walden ...	12,528	Jan. 18, 1890.
Sculcoates	8,670	Jan. 8, 1890.
Sedbergh	4,079	Feb. 1, 1890.
Southwell	20,351	,,
Stroud	27,195	,,
Sudbury	23,571	,,
Ticehurst	17,219	Jan. 1, 1890.
Todmorden	6,992	Feb. 1, 1890.
Towcester	12,584	Jan. 7, 1890.
Upton-on-Severn ...	16,556	Jan. 16, 1890.
Wallingford	11,690	Feb. 1, 1890.
Ware	13,368	Jan. 1, 1890.
Warwick	10,845	,,
Wellington (Som.) ...	11,210	Jan. 26, 1890.
Welwyn...	2,300	,,
West Firle	2,369	Feb. 1, 1890.
Whitchurch (Hants) ...	5,458	,,
Whitchurch (Salop) ...	7,490	Jan. 1, 1890.
Windsor	19,517	,,
Winslow	9,086	,,
Wokingham	16,919	,,
Port Authorities:—		
Cardiff	—	Dec. 16, 1889.
Colchester	--	Feb. 5, 1890.
Cowes	—	Feb. 1, 1890.
Fowey	—	,,

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Name of Authority.	Population (1881).	Date on which Act comes into force.
Port Authorities:—		
Hartlepool	—	Jan. 1, 1890.
Newport (Mon) ...	—	Feb. 1, 1890.
Rochester	—	Dec. 19, 1889.
Teignmouth	—	Feb. 1, 1890.
Weymouth	—	Feb. 10, 1890.
Total ...	2,605,920	
Population of Districts given in previous numbers	5,927,888	
Grand total ...	8,533,808	

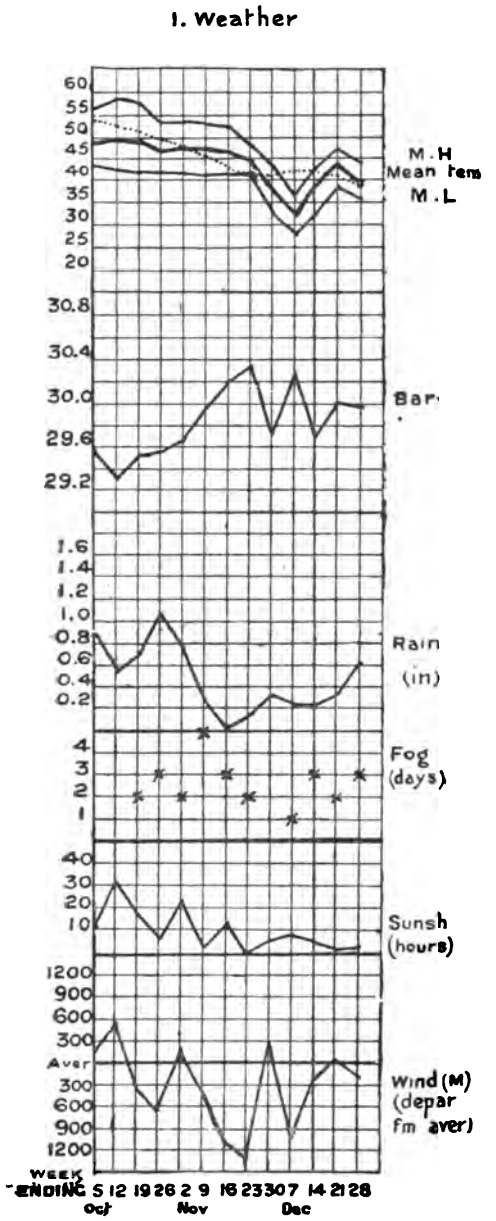
THE DISINFECTION OF BOOKS.—The Boston Health Board has ordered that the public library ticket, held by any person in whose family a case of contagious disease has occurred, be stamped so as to show the presence of such disease. All books returned with a card so stamped are to be disinfected, and no other books can be taken out on this card until an official notification is received that the danger of contagion no longer exists. It is not stated on whom the duty of stamping the ticket devolves, we presume on the householder, but who is to see that he does it, and what is the penalty if he does not?

EARL SPENCER, speaking at the Brixton Board of Guardians, strongly censured the Local Government Board for its delay in sending out reports. In August an outbreak of diphtheria occurred at East Haddon, and many people died. An inspector visited the village in September, but no report had yet been received, and this delay, his lordship considered, was most serious and deplorable. The local authority was most anxious to deal with the outbreak, but they were completely paralyzed owing to the absence of the report. It was a sad reflection on centralized government for an authority to wait from the middle of September onwards for a report, and these delays furnished the strongest arguments against a central government in London. As chairman of the county council he was not anxious to assume fresh duties, but he ventured to say that if they had had to deal with the matter they would have brought common-sense to bear, and not have paralyzed the action of the local authorities.

MR. JOHN LONG, writing in the *Manchester Guardian*, says:—The public may once more be reminded of the value of milk as a winter food, more especially when used in conjunction with farinacious foods and consumed warm. During the Lancashire cotton famine it was found by Dr. Smith that an average adult person can exist upon 4,100 grains of carbon and 190 grains of nitrogen. The reader will remember that a constituent of milk—the curdy matter—is often spoken of as nitrogenous, and that the butter and sugar in milk are just as often spoken of as carbonaceous or heat-giving. One pound of new milk contains 44 grains of nitrogen and 599 grains of carbon. Five pounds of new milk would therefore be more than sufficient to provide the nitrogenous or flesh-forming material required by an ordinary man, who can make up the deficiency in the carbon by the addition of a slice of bread. When we reduce a fact like this to figures, we see how possible it is for a poor person to sustain life at the very small cost of 5lb. of milk, equivalent to two quarts, costing at the present time about 4½d. on the farm. If, however, we pursue the matter a little farther, we find that a similar quantity of skimmed milk will provide the necessary flesh-forming matter and a large portion of the carbon or heat-giving matter, for skimmed milk not only contains almost all the sugar of the milk but a small proportion of the butter. Again, however, the deficiency can easily be made up by the addition of bread. The milk-seller might therefore be more patronized, with advantage both to the consumer and the farming interest.

WEATHER AND HEALTH OF LONDON IN THE LAST QUARTER OF 1889.

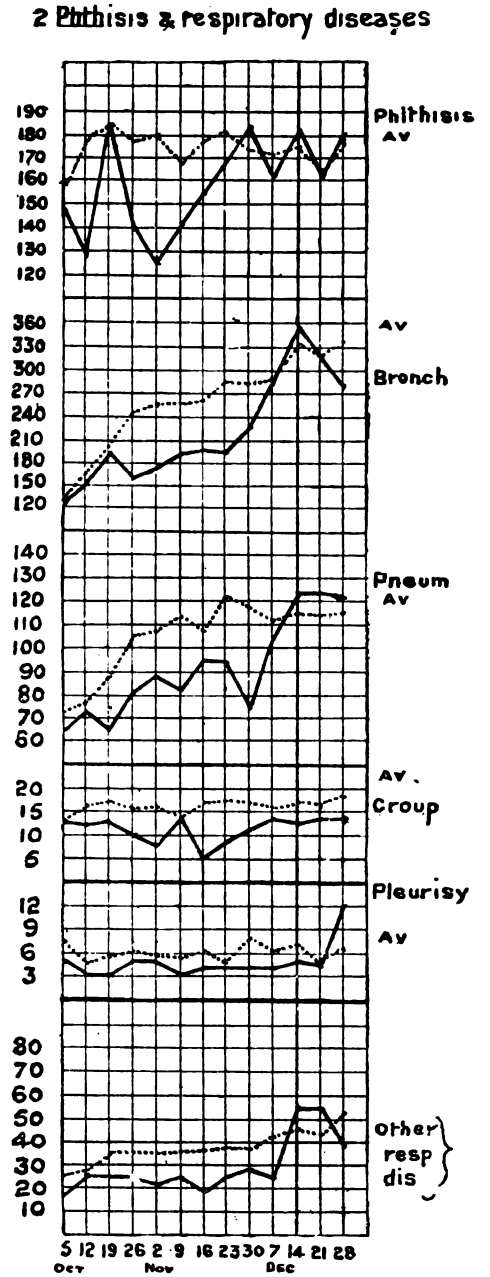
THE large and increasing amount of statistical matter which now issues from various official sources is improving, not only in extent of detail, but in reliability as evidence on the subjects dealt with. In the useful Weekly Return of the Registrar-General we have a series of pictures of the metropolis as regards



health, and the weather-conditions which doubtless largely affect it. We propose to look at these from time to time, making use of the graphic method, which, to many, is a great help to clear mental vision.

In the three diagrams here presented (really three vertical series of diagrams), we show (1) various

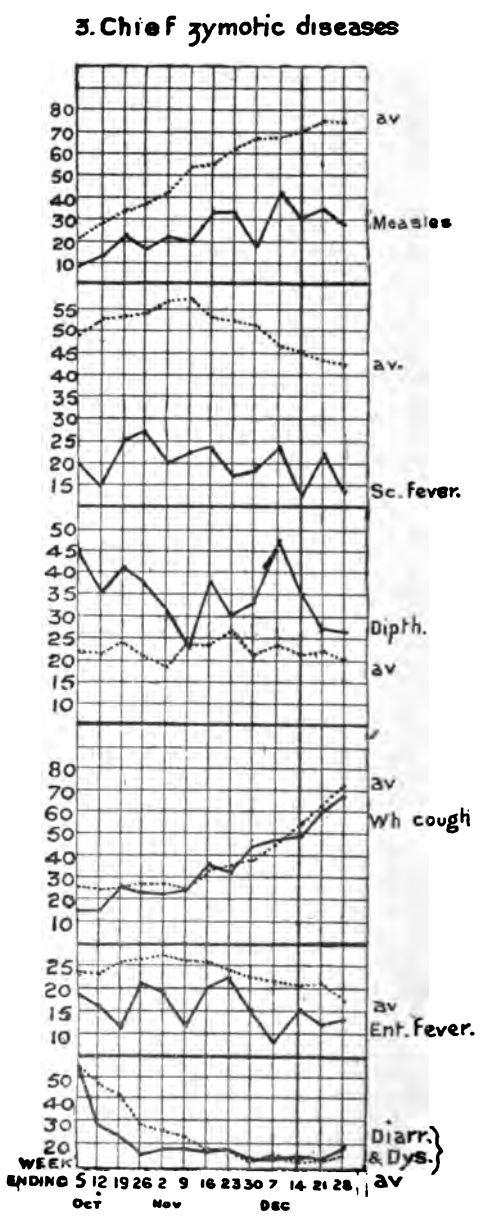
items of the weather at Greenwich, week by week, during the last quarter of 1889; (2) the deaths from phthisis and diseases of the respiratory system in London, week by week (continuous curves), compared in each case with the corrected averages* (dotted line curves); and (3) the same for the



principal zymotic diseases. We shall merely note a few of the salient points in these diagrams, which we invite the reader to study independently.

As to weather; we have first a curve of mean temperature, with two others, showing means of the highest readings and means of the lowest. The dotted curve gives the average mean daily value for 20 years.

Note the sharp fall in the two weeks after that ending November 23, and the recovery in the fortnight following. The mean was under the average in the first five weeks of the period and in the last week of



November and first two of December; in the other five weeks above it.

The barometer-mean steadily rises in the six weeks after October 12.

Next we have rainfall, which was greatest in the earlier part of the quarter, reaching a maximum in the week ending October 26.

The crosses indicate, by their position, the number

* The "corrected averages" are the average weekly deaths for the ten years 1879–88 raised by 9·046 per cent. for increase of population.

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of days, in each week, that fog was observed at Greenwich. There was most fog in the beginning of November; and the amount throughout the quarter appears to have been excessive.

The sunshine-curve sinks, with fluctuations, towards midwinter.

Representing (for convenience sake) the average of wind movement by a straight line, we give a curve which shows the departures from the average in miles. Evidently the wind was much in defect. (The minuses amount to 5,361, the pluses only to 1,170.)

Turning now to disease, the report to be given is evidently, on the whole, a good one. Most of those curves of mortality are in great part, or throughout, below the average curves.

There is one distinct exception, viz. diphtheria, the curve for which goes below the average only once (in the first week of November); while in the beginning of December it reached 47 (against average 23·6).

In evident connection with the sharp fall of temperature from November 23 are the rapid rises in the curves for bronchitis, pneumonia, and other diseases of the respiratory system, after the same date. The mortality from bronchitis reached a maximum of 356, and that from pneumonia reached 123 in the second week of December. The deaths from pleurisy rose suddenly from 4 to 12 in the last week of the quarter.

In the case of phthisis note the low point reached at the beginning of November, and the steady rise in the four following weeks.

Of zymotic diseases, scarlet fever is conspicuously below the average throughout. The mortality from measles rises at a less rate than it usually does at that time of the year (besides being also under the average throughout).

Whooping-cough and diarrhœa and dysentery show little departure from their averages.

We have not represented small-pox, there being only one death from it (early in November). The weekly average varies from about 4 to about 12.

Some might look for an account of influenza, which usually occupies a low position among the zymotic diseases. Only one death in the quarter, however, is attributed to it.

DIPLOMAS IN PUBLIC HEALTH.—The following gentlemen having passed the necessary examinations have been admitted by the Royal Colleges of Physicians and Surgeons as diplomates in public health:—Messrs. Charles Frederic Bailey, M.D.Lond., M.R.C.P.Lond., and M.R.C.S.Eng., of St. Bartholomew's Hospital; James Bampfylde, M.R.C.S.Eng., of Guy's Hospital; Framroz Shavaksha Davar, L.R.C.P.Lond. and M.R.C.S.Eng., of Bombay; Arthur Wellesley Harris, M.R.C.S.Eng., of Charing-cross Hospital; Henry Nelson Holberton, L.R.C.P.Lond. and M.R.C.S.Eng., of St. Thomas's Hospital; William Lovell Hunter, M.D.Dublin, of Dublin; John William Gregory Kealy, M.R.C.S.Eng., of King's College Hospital; William Henry Kempster, M.B.Durham and M.R.C.S.Eng., of Westminster and Durham University; George Frederic Elliot Morgan, L.R.C.P.Lond. and M.R.C.S.Eng., of Guy's Hospital; William Pringle Morgan, M.B.Dublin, of Dublin; Frederick Norman, L.R.C.P.Lond. and M.R.C.S.Eng., of St. Bartholomew's Hospital; Charles Edward Paget, L.R.C.P.Lond. and M.R.C.S.Eng., of St. Bartholomew's Hospital; James Harry Poland, M.R.C.S.Eng., of Guy's Hospital; Arthur Roberts, M.D.St.Andrews and M.R.C.S.Eng., of Manchester; George Holden Sylvester, F.R.C.S.Eng. and L.R.C.P.Lond., of St. Bartholomew's Hospital; and Lot Albert Taylor, L.R.C.P.Lond. and M.R.C.S.Eng., of Birmingham.

THE

SANITARY RECORD.

The Organ of the Association of Public Sanitary Inspectors of Great Britain, and of the National Association of Sanitary Inspectors.

JANUARY 15, 1890.

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The Editor will be glad to receive, for publication, announcements of meetings, reports of proceedings, and abstracts or originals of papers read at meetings of Medical Societies of Health, Public Analysts, and Sanitary Inspectors' Associations, &c.

Medical Officers of Health, Public Analysts, Town Clerks, Local Board Clerks, Sanitary Surveyors, and Inspectors, are requested to send Notices of Appointments and Vacancies to the Editor, care of Messrs. W. H. ALLEN & Co., 13 *Waterloo Place, S.W.*

THE SANITARY RECORD will in future be published by Messrs. W. H. ALLEN & Co., 13 Waterloo Place, S.W. All matters relating to the literary portion of the Journal, and all exchange journals, periodicals, books for review, and new inventions, should be addressed to the EDITOR at above address. All business communications relating to Advertisements, Subscriptions, &c., to be addressed to the MANAGER at the same address.

LEGISLATION AS TO ARTISANS' DWELLINGS.

How to provide decent dwellings for the working-classes in our large towns, and especially in London, is one of the pressing questions of the present time. The Local Government Board have recently sent a circular to all urban sanitary authorities, calling their attention to the powers which have been conferred by Parliament, and to the importance of their putting those powers in force. The powers are contained in numerous Acts of Parliament, each professing to amend what had previously been enacted, and by its amendments making an originally complicated matter more difficult to comprehend, so that now it is fair to say that none but skilled lawyers, and only a few of them who have made the subject a special study, can discover what the law does allow. Under such circumstances it is not surprising that sanitary authorities have shown themselves indisposed to exercise powers of which most of their members are absolutely ignorant, and that much legislative labour has produced very small results. The London County Council have given voice to the feeling of all who have given any attention to the matter, and have done good service by calling the attention of the Home Secretary, and so of the Government and of Parliament, to the necessity of codifying these Acts. But the deputation at the same time manifested a great want of observation, and of appreciation of what is possible, by asking that the law should be amended at the same time when it is codified. Experience shows that Parliament is very jealous of alterations made by Bills which profess to re-enact previous

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legislation, and that such alterations frequently endanger the passing of the desired code. In theory no doubt the alterations should be made before the law on any particular subject is codified. This was done for instance in 1872, *before* the Public Health Act, 1875, abolished the previous chaos of sanitary legislation, and provided a code which seems likely, though from time to time amended, in the main to regulate our conduct as regards public health for many years to come. If the proposed amendments were vital to the working of the law as to the housing of the working-classes, it might be desirable to try to pass them into law before attempting to codify. But we fancy that even the London County Council will agree that in this case codification, so as to make the law intelligible to the ordinary mind, is more important than the suggested alterations.

Of the five amendments which the County Council propose, the first, viz. that the medical officer of a county council should be empowered to initiate proceedings, as well as the four ratepayers or local medical officer who now have that power, seems reasonable enough, and might probably be allowed to pass in a codifying Bill without much opposition. The others would certainly be debated, and some at any rate seem of doubtful expediency. Under section 8 of the Act of 1882, a local authority may purchase what is termed an "obstructive building," although not itself unfit for human habitation, "if, by reason of its proximity to or contact with any other buildings, it stops ventilation or otherwise makes or conduces to make such other buildings to be in a condition unfit for human habitation, or if it prevents proper measures from being carried into effect for remedying the evils complained of in respect of such other buildings." The London County Council propose to enlarge this power so as to include under the term "obstructive building" any buildings so situated as to prevent measures from being carried into effect for opening out any alley or court inhabited by the labouring-classes. They also propose to deprive the owner of his right to retain the site of an obstructive building. And further they propose to include within the scope of the section of the Act of 1882 which deals with such buildings, "all premises in respect of which an order for demolition" has been made. These proposed alterations are undoubtedly far-reaching. Where premises are acquired by a local authority under these Acts, the measure of compensation payable to their owners is considerably lower than in the case of other premises taken compulsorily for public or quasi-public objects. In the case, moreover, of premises acquired as "obstructive buildings," part of the cost may be thrown on adjoining premises supposed to be benefited by their removal. Local authorities can thus effect improvements much more cheaply to themselves than if they were acting under the Public Health Act, but they do so at the expense of the owners of the property they take. The alteration proposed by the London County Council would enable a sanitary authority to take compulsorily business premises fronting on a main street, at a minimum price, under the pretext that some court or alley in their rear needed improved means of access. Part of the cost of this operation might be charged on the houses in the court, with possibly the result of raising the rents of those houses so as to make them no longer suitable for occupation by the labouring-classes. It may be desirable to make such changes in the law—on this point we reserve our judgment—but certainly such changes would be far-reaching in their effects, and are not to be smuggled through Parliament without due consideration.

The last change proposed seems to us wholly unnecessary, and would, if adopted, be retograde rather than progressive. By section 9 of the Artisans' and Labourers' Dwellings Act, 1868, any person aggrieved by an order of a local authority may appeal to Quarter Sessions, and that Court "shall, at the request of either party, state the facts specially for the determination of the Queen's Bench" Division of the High Court. This appeal to the High Court, like all other appeals to it from Quarter Sessions, is an appeal on questions of law only, and on those questions it is difficult to suggest a better tribunal. The County Council, without assigning any reason for the change, suggest that this appeal should be to the Local Government Board. We have great respect for that department, but it is not a legal tribunal, and where it has to decide points of law its decisions are not always satisfactory or consistent. We are glad to see that the Home Secretary in no way favoured this so-called amendment of the law and hope that it, at any rate, may be consigned to oblivion. The other changes, whether desirable or not, should not be allowed to interfere with the work of consolidating the existing statutes and making the law intelligible. The Government, we understand, have undertaken this task, and Lord Compton and his friends in Parliament will do well to facilitate the passage of the Bill even though their pet projects should in consequence have to be shelved.

NUISANCES INJURIOUS TO HEALTH.

UNFOUNDED complaints and suggestions for unnecessary alterations of the sanitary laws are frequent, but those who know those laws are well aware that in many points they might be improved. Dr. Dudfield, the well-known Medical Officer of Health for Kensington, in his report has recently called attention to certain practical difficulties in dealing summarily with nuisances injurious to health, which undoubtedly exist, and for which it is not easy to suggest a practical remedy. The law on which he comments, as regards the metropolis, is contained in the Nuisances Removal Act, 1855, as amended by the Public Health Act, 1866. Outside London these Acts have been superseded by the Public Health Act, 1875, which deals with these matters by secs. 91-111. The provisions of the latter Act are, perhaps, rather clearer than those applicable to the metropolis, but their effect is, in the main, the same. The point on which Dr. Dudfield lays most stress is the delay which, in practice, always takes place between the detection of a nuisance and the time when it is finally remedied. Some delay, from the nature of things, there must always be. The scheme of the legislation as to these nuisances has been to give power to sanitary authorities to take proceedings before magistrates for the removal of certain nuisances which are injurious to health, leaving other nuisances to be dealt with by the more dilatory and expensive procedure by indictment, or by actions brought by persons who think themselves aggrieved. But even summary proceedings cannot be brought to a hearing instantaneously. The sanitary authority must, first of all, be made aware of the existence of a nuisance, either by a report of one of its officers or by a complaint from a neighbour. If satisfied of the existence of the nuisance—and frivolous complaints

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are sometimes made—the sanitary authority has then to serve a notice, calling on the person in default to remedy the nuisance within a period specified in the notice; and if that is not done, a summons claiming an order to do the necessary works, and penalties for neglecting to comply with the notice, can be taken out, and the case is dealt with by the magistrates. Dr. Dudfield says that frequently no steps are taken to abate the nuisances until the summons is served; the required work is then done, and no penalty for previous neglect is inflicted. This state of things gives undoubtedly great opportunities for delay, but by good administration they may be minimised. Under the Public Health Act the notice to do the necessary works must be given by the sanitary authority; and as the Courts have held that they are to judge what works are necessary, it is difficult to see how the power of giving this notice can be delegated to any official, even though that official usually drafts the notice and suggests the works required. In the metropolis the Act allows the notice to be given by the sanitary authority or chief officer of police, thus recognising an official as a fit person to give such notices. If this power could, under the Acts, always be exercised by the inspector of nuisances or some other official, whose duties require him to be constantly accessible, a fruitful source of delay would be avoided, and the attention of persons in default would be called to the necessity of removing nuisances much earlier than it is now. Time might also be saved by taking care, in the notice, to define only such a period as was reasonably requisite for doing the works specified. If the notice is not complied with, the sanitary authority is bound to apply for a summons, so there is no excuse for any delay at this stage, and the application should always be made on the day when the notice expires. Magistrates' clerks might also, in all cases where a nuisance injurious to health is said to exist, make the summons returnable at the earliest possible day; and magistrates should make a point of inflicting substantial penalties wherever it is shown that the neglect to do the required work has been without reasonable excuse. If, as we suggest, the preliminary notice is, for the sake of saving time, given by an official, it will, of course, be open to the defendant to contend that the required works are wholly unnecessary, and, consequently, to claim a judgment in his favour. Certain cases, in short, in which orders are now made would fail altogether, but, on the whole, there might be a considerable acceleration in getting cases of nuisances decided, and, consequently, in securing the abatement of all nuisances which are serious. The delay of which Dr. Dudfield complains might thus be greatly reduced by care on the part of those who have to enforce the law.

One class of nuisance to which Dr. Dudfield calls special attention, and which is probably more common in London than elsewhere, is that caused by overcrowding. As he points out, it is often the fault of the tenants rather than of the landlord, and where that is the the case it is difficult to suggest a remedy. A landlord who has duly had notice of the nuisance, and been ordered to abate it, cannot forthwith remove the offending crowd. His tenant is entitled, at the least, to a week's notice to quit. If that is not attended to, a summons returnable at the end of eight days can be procured, and then the magistrates, if satisfied that the notice to quit was duly given, are to issue a warrant requiring the police, within a period of not less than 21 nor more than 30 days from its date, to enter the premises and give possession to the landlord or his agent. In case of a recalcitrant tenant the law thus gives a period of at least 36 days from the time when a nuisance from overcrowding is discovered before it can be summarily removed. This law as to summary ejectments is not part of the sanitary laws at all, but it has to be called in to their aid. Delay in clearing out a human pigstye may sometimes be a matter of serious importance, but we fear that any attempt to shorten the period or facilitate the process of "evictions" would not, at present, be favourably regarded. Overcrowding in certain cases must, therefore, remain a matter with which the law is powerless to deal promptly, however desirable from a sanitary point of view a change may be. By sect. 109 of the Public Health Act, magistrates are empowered to order the closing of a house where there have been two convictions for overcrowding within three months, so that tenants cannot go on for ever defying both their landlords and the sanitary laws. But it seems to be impossible always to remedy nuisances caused by their default as quickly as might be wished. Local authorities should, therefore, be alert to detect nuisances and take proceedings for their suppression promptly, so as not to make them worse by adding to the delays allowed by law, others of their own which need not occur.

AMENDMENTS IN THE PUBLIC HEALTH ACT.

THE paper on the Public Health Act, from a sanitary inspector's point of view, read by Mr. Wilkinson at the meeting of the National Association of Sanitary Inspectors, and printed on page 312, has the merit of dealing in an eminently practical manner with a subject with which the author is evidently well acquainted. To those who remember the chaotic state of the sanitary laws in this country prior to 1875, and the vast improvement and simplification which was effected by the passing of the Public Health Act of that year, Mr. Wilkinson's demand for further legislation, "condensing, simplifying, and amending the whole of the matters relating to sanitary law," may appear rather startling; but we agree with him that it is desirable to do away with the present dual control under which the metropolis in matters of health is subject to one set of statutes, and the rest of England to another. The task, however, of codifying all the Acts which confer powers on sanitary authorities is one of such magnitude that Parliament is not likely to undertake it immediately, and we must be content if such amendments as appear to be most necessary can be passed into law. The promised Act to complete the Local Government Act of 1888 by the creation of district councils will give an opportunity for the passing of these pressing amendments, and those interested in sanitary legislation will do well to bear them in mind when that opportunity offers. The efficiency of the Public Health Act in suppressing or removing things injurious to health is now frequently impaired by the delay and red tape to be encountered before the powers of the Act can be put in force. In many cases the local authority has first of all to become aware of a state of things requiring its interference, and then to give notices requiring that state of things to be remedied, before it can take any steps to enforce the law. All this necessarily takes time. A local authority, being a corporation, can only act when duly convened for business, and only meets periodi-

cally. A delay of weeks may often take place, without anyone being in fault, before effective steps can be taken to insure the removal of some flagrantly offensive and unhealthy nuisance. Some local authorities now, in practice, delegate some of their powers as to giving notices and so forth to their inspectors of nuisances, and so secure greater promptness in dealing with nuisances. How far in strict law they can delegate these functions seems doubtful; and Mr. Wilkinson's suggestion, that many of these powers should, by law, be given to the inspector in the first instance, seems a good one. We also agree with him that it would be well to make a division in the classification of nuisances which may be dealt with under the Public Health Act, and to put all nuisances of a non-structural character on the same footing as various matters which are now dealt with under the Towns Police Clauses Act. There are many matters in which annoyance, or it may be injury, may be caused to the public, or to neighbours, from carelessness or improper acts on the part of individuals; in such cases a notice to amend his ways is wasted on the person offending, and is only a means of delay. A summons to appear before a magistrate and explain why he should not be fined for his offence is all the notice which, in justice, he need get. In case of structural defects, where substantial and expensive works may have to be undertaken in order to rectify defects, the procedure ought to be more deliberate. The local authority may in such a case impose serious responsibilities on the owner of premises, or on the ratepayers, and should therefore give the owner full notice of their requirements before proceeding to enforce them. In these cases the formalities now required by the Act should be retained; but in cases which properly are matters of police, the inspectors of nuisances might well be allowed to initiate proceedings without first reporting to, and obtaining special directions from, the local authority which employs him. We also agree that the powers of inspector in the matter of entering on premises when requisite, for the purpose of detecting the existence of nuisances which require to be remedied, might be made clearer, and extended; though Mr. Wilkinson seems rather to underestimate the powers which the law now gives him. As regards one matter of great practical importance, the supply of unwholesome food, he points out a well-known defect in the law when he shows that section 116 of the Public Health Act is so worded as to exclude certain common articles of diet, such as cheese and eggs (he might have added butter). Whenever Parliament shall revise this section, we presume the omissions will be remedied. Into his strictures on the sections dealing with slaughter-houses we do not propose to follow him. The sections are certainly involved, though we do not agree that they are unintelligible; but we cannot think it likely that Parliament will go the length of suppressing all private slaughter-houses—apparently without compensation—where they are not shown to be nuisances, or badly conducted. Excessive zeal for perfection often proves a stumbling-block in the way of would-be legislators; and we fear that if all possible improvements in sanitary legislation are pressed on the attention of Parliament, the result will be that all alike will be rejected. Some of Mr. Wilkinson's suggestions seem to us eminently practical and possible of attainment; and we should like to see them pressed forward, and not sacrificed for the sake of other changes which are much more likely to provoke opposition.

THE LONDON WATER COMPANIES AND THE SEWAGE DIFFICULTY.

APPLICATION is to be made in Parliament in the coming session for powers to form a Joint Drainage Board composed of representatives from the Staines Local Board, the Staines Rural Sanitary Authority, and the Chertsey Union Sanitary Authority. The Thames Conservancy and the water companies will also be represented on the Board. The business of this Board will be to carry to a point below any of the water intakes the sewage of the places upon the river Thames between Egham and Sunbury inclusive. For many years these places, although anxious to comply with the requirements of the Public Health Act, have, owing on the one hand to the impossibility of establishing sewage works anywhere above the water intakes, and on the other to the prohibitive expense for conveying their sewage elsewhere, been absolutely unable to comply with the incessant demands of the Local Government Board and the Thames Conservancy. The fate of the application by the Chertsey Union will be fresh in the minds of many readers. The scheme was designed to put a stop to the abominable system of refuse removal at present existing, but it was opposed by the whole of the water companies and the Thames Conservancy Board, not upon the ground that the scheme was ill-designed or would not purify the sewage as well as sewage can be purified, but because they thought that no sewage works, however good, should be established where they could by any chance cause the least pollution to the water supplied to London. This view prevailed at the Local Government Board, and there is much to be said for it, but, as Mr. Mansergh, the engineer to the present proposal, said, when giving evidence for the Weybridge scheme, "These places were here before the water companies, and if, by means of the requirements of these companies, they are not able to deal with their drainage difficulties as they otherwise would, it is only fair that the water companies should help to bear the extra cost to which these unfortunately situated places must be put." The present application puts the idea into practical shape, and it is provided that the companies shall amongst them find an annual sum of £4,000 towards the expense of an intercepting sewer. The chemical purification works which, judging from the population, will be somewhat the same size as those recently erected at Kingston Bridge, will be placed upon land adjoining the Esher Sewage Works, and immediately between them and the site selected by the East Molesey Local Board for their sewage works. The proposed Joint Board will possess the same powers of constructing sewers under sanction from the Local Government Board, as are possessed by an urban sanitary authority.

THE BETHNAL GREEN POOR'S LAND.

The "village greens" of London is a term which sounds truly paradoxical, and yet the great overgrown town which we call London is merely composed of a city, once walled in, and a collection of surrounding villages, which have each grown so fast, and spread their borders so systematically, that they have become merged the one into the other. Some of the greens remain, though sadly curtailed and altered from what they once were—Paddington, Islington, Newington,

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Stepney, and others of a similar kind—but many have totally disappeared. Bethnal Green, the poorest of the poor districts which make up the Metropolis, and the centre of what is known as East London, still possesses its village common or green, but much of it has already been wrested from the people, and more is now in danger of sharing the same fate.

The Poor's Land, for such is its proper name, was purchased and enclosed some 200 years ago by certain benevolent individuals who put it into the hands of twelve trustees, the trust-deed explicitly stating, "Provided always that none of the said contributors or trustees, their heirs or assigns, or any of them, do, or shall at any time erect, or suffer to be erected, any buildings upon the said enclosed premises, or upon any part or parcel thereof." The trustees were further instructed to keep the gates, stiles and foot-paths in repair. The present state of this intended open space, originally consisting of 15½ acres, is as follows, the vicissitudes through which it has survived during the 200 years being passed over. Six acres and a half are occupied by buildings and their surrounding enclosed courts, including St. John's church and vicarage, and the Bethnal Green Museum. Two acres and a half compose the Bethnal Green Museum grounds, open to the public, and maintained by the London County Council. These portions were taken by Acts of Parliament (see 31 Vict., c. 8). About three-quarters of an acre exists as roadside waste and fore-courts to small houses in Cambridge Road and Victoria Square, and the remaining five or six acres are enclosed behind wooden palings and used as a private garden for the Bethnal House Lunatic Asylum. They are bounded on the west by the crowded thoroughfare Cambridge Road, and on the south by the Great Eastern Railway, on the east by the Asylum, and on the north by Green Street and St. John's church. The trustees of the Asylum have been paying a rental of £120 per annum, but their lease expired last Michaelmas Day. They offer £500 per annum for a twenty-one years' renewal of the lease, and are ready to allow a part of the ground to be opened to the public after noon daily. But seven of the twelve trustees of the Poor's Land (gentlemen holding parochial offices) are in favour of using a further portion of the land as sites for a town hall, an infirmary, and a free library; if these buildings are needed, sites can be found for them in other parts of the parish.

The Charity Commissioners have approved this scheme, although fully alive to the intentions expressed by the trust-deed, and hence the struggle has arisen, initiated by the Metropolitan Public Gardens Association, which has raised the wind in Bethnal Green, and divided its inhabitants into opposing camps. The London County Council, the Public Gardens Association, the Commons Preservation Society, five of the trustees, the authorities of the Asylum, and a large and influential local "Preservation" Committee are on one side of the camp. The Charity Commissioners, the majority of the Guardians and Vestry of Bethnal Green, and seven of the trustees, are on the other. Public meetings have been held, and largely signed memorials have been presented to the Commissioners by both sides, and numerous letters, pamphlets, and leaflets have issued from the press.

It is impossible to enter into all the different sides of this important question, or to describe the various objections raised against the scheme of the Commissioners, and the suggestions made for the proper carrying out of the original trust-deed. The matter is not yet settled one way or the other, but the fact remains that a valuable open space of six acres, well timbered and situated in a most convenient position, is either to be given to the people of Bethnal Green, or the chance of securing it for the health and benefit of the inhabitants of that poor and crowded district is to be lost for ever. If the provisions of the trust-deed are overturned by the Charity Commissioners, a precedent will be created endangering all open spaces, and a difficulty will be at once put in the way of those persons who may in future be disposed to leave similar lands for a similar purpose.

THE zymotic death-rate of Hastings, for the third quarter of 1889, was only 1·12 per 1,000, a very favourable rate for a summer quarter. The deaths included 12 from diarrhœa, 3 from diphtheria, and 1 from whooping-cough.

EFFECTIVE GERMICIDES. — *The New York Medical Record* states that by actual experiments, Dr. Weeks has studied and arranged the following agents in the order of their value:—Bichloride of mercury, chloride of lime (fresh), chlorinated soda (fresh), chlorine water (saturated), nitrate of silver, salicylic acid, creasote from birch-wood (Merck), alcohol (absolute), carbolic acid, "Sanitas" oil No. 1, "Sanitas" crude, potassium permanganate, bisulphate of mercury, "Sanitas" disinfecting fluid, creolin, trichlor. phenol (in ether), hydrogen dioxide, aseptol, Listerine, oil eucalyptus globulus, iodoform and ether, balsam of Peru, oil of thyme, chloride of iron, tincture chloride of iron, liquor chloride of iron, iodide of silver, naphthalin in ether, oxynaphthoic acid, ichthyol, oil of cade, biniodide of mercury, oxycyanide of mercury, yellow oxide of mercury, red oxide of mercury, bromide of mercury, resorcin, beta naphthol, potassium hydrate, thallin, terebene, iodoform.

THE NATIONAL HEALTH SOCIETY.—The National Health Society in connection with Miss Buss of the North London Collegiate School for Girls, is taking up the subject of the physical education of girls, and have formed a special committee for the purpose of investigating, encouraging, and improving this most important branch of a girl's education. The Society has also succeeded in securing a staff of most able lady lecturers, who are now in active work giving instruction in Domestic and Personal Hygiene, First Aid to the Injured and Nursing the Sick, to classes of ladies and working women, in drawing-rooms and school-rooms, all over London and the suburbs. Amongst the trained hospital nurses who give instruction in Home Nursing are Miss Margery Homersham, late of the London Hospital, and Miss Kenealy, late of St. Bartholomew's Hospital. Applications for these lectures should be made to the Secretary of the National Health Society, Miss Lankester, 44, Berners Street, W.

ALTHOUGH the directions for constructing Dr. Parker's Cottage Filter has often been published, it is so simple and useful that no apology is needed for reproducing it at a time when various zymotic diseases are rife throughout the country. The directions are as follows:—"Get a common earthenware flower-pot, and cover the hole with a bit of zinc wire-gauze, or of clean washed flannel which requires changing from time to time; then put into the pot about three inches of gravel, and above that the same depth of white sand washed very clean. Four inches of animal charcoal (covered with a thin stratum of coarse gravel, or with a piece of slate to keep it in place) constitute the last layer, and the water should be poured in at the top and be received from the hole at the bottom into a large glass bottle. The charcoal will, from time to time become clogged, and must then be cleaned by heating over the fire in a shovel. The sand or gravel should also be cleaned or renewed from time to time"

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NOTES OF THE MONTH.

THE COMPULSORY NOTIFICATION OF INFECTIOUS DISEASE IN HEALTH RESORTS.

It is very satisfactory to observe the extent to which the Infectious Disease (Notification) Act of last session has been adopted in the "health resorts" of England and Wales. The Act has already been voluntarily adopted by the local authorities of Aberystwith, Ambleside, Bangor, Berwick-upon-Tweed, Bexhill, Bournemouth, Bowness, Broadstairs, Budleigh Salterton, Buxton, Clacton-on-Sea (Tendring rural district), Colwyn Bay, Dawlish, Dolgelley, Dover, Droitwich, Eastbourne, East Cowes, Falmouth, Fleetwood, Folkestone, Grange-over-Sands, Grasmere, Great Yarmouth, Havant, Herne Bay, Ilfracombe, Isle of Thanet, Isle of Wight, Kendal, Keswick, Kingsbridge, Leamington, Lydd, Malvern, Malvern Link, Morecambe, New Brighton, (Wallasey urban district), Paignton, Penzance, Plymouth, Queenborough, Ramsgate, Salcombe, Sandgate, Sandown, Scarborough (rural), Seaford, Sheerness, Southend, Southport, Saint Mary Church, Teignmonth, Tenby, Tonbridge, Tunbridge Wells, Tynemouth, Ventnor, Walton-on-the-Naze, Westgate-on-Sea (Isle of Thanet rural district), Weston-super-Mare, Whitehaven, Whitstable (Blean rural), Windermere, &c. In addition to these places the compulsory powers have been acquired from time to time by local Acts for the following seaside resorts:—Blackpool, Cheltenham, Grimsby, Llandudno, Scarborough, Torquay, and Weymouth. From this list it will be seen that the system of compulsory notification of infectious sickness is in force in a very large majority of the more important and favourite English health resorts. So much disease has been spread in times past through the concealment of infectious disease by individuals in so-called health resorts, and so large an amount of damage has in consequence been done to the reputation of naturally health-giving localities, that, apart from the important question of protecting from risk of infection visitors to health resorts, local authorities will do well, in their own interests and for reasons of self-protection, to avail themselves of the powers of the recent Act. By the aid of those powers, when adopted, a local authority will be able to arrest the spread of infection by thoughtless or selfish visitors, as well as by permanent residents and culpable lodging-house keepers, and the public, upon whom the health resorts depend for the greater part of their prosperity, will not be slow to recognize the guarantee of safety thereby extended to them. In addition, however, every health and holiday resort should be provided with adequate means for the prompt isolation and treatment of cases of infectious sickness, and for the disinfection of bedding and other articles which have been exposed to infection.

THE DARK COURTS OF BIRMINGHAM.

The "hardware city" has at length aroused itself as to the scandal and danger of its unlighted courts. These places are cunning devices whereby the landlord makes the very utmost of his ground area, and it is estimated that from sixty to a hundred thousand of the poorer population of Birmingham are thus housed. The tenements are cramped, the rents low, and sanitary arrangements often most defective. In some of the worst quarters the squalid filth of the courts, of the houses, and of the people, is simply a disgrace to any civilized community. Birmingham suffers from an undue amount of enteric fever, and when an outbreak occurs of a markedly contagious nature, such as scarlatina, these localities offer so many hot-beds for the disease. Yet the poorer classes, on the whole, are willing to co-operate in hygienic measures, as instanced by the cordial way in which they worked with the authorities during the late fever epidemic. Now that public attention has been drawn to the evils entailed by the want of light, it is to be hoped that the people will insist on prompt and satisfactory action. At present the difficulty appears to be as to who shall defray the cost. The council declines on the ground that courts are byeways and not highways. The landlords claim that the Corporation should light up their houses just as it does those in the open street. Something, however, must clearly be done, even if further powers have to be obtained. The tendency of modern times is to exact from landlords an increasing levy in favour of tenants, and it is hardly likely that democratic Birmingham will allow owners to improve their uncivilized properties at the expense of the ratepayers.

THE LAW OF BETTERMENT.

As the question of "betterment" is now the subject of considerable discussion in connection with the Strand improvement scheme, our readers may be interested in knowing what it is the London County Council actually propose. The clause in the draft of the London Streets (Strand Improvement) Bill which is said to involve the principle in question is of great length, being, indeed, almost a Bill in itself. It commences with a recital that whereas the proposed improvements being effected out of public funds belonging to or charged upon the ratepayers of the county of London, will or may increase in value lands or property fronting on or in the neighbourhood of the improvements, but not acquired for the purpose thereof, it is reasonable that provision should be made under which such increased value should be reserved wholly or in part for the ratepayers, at whose expenditure it has been produced. Therefore it is proposed that there shall be a rent-charge, the total of which is not to be of any amount which, when capitalised on such basis as the standing arbitrator (who may be from time to time appointed for the purposes of the Act, on the application of the County Council, by the Home Secretary) may deem reasonable, would, in his opinion, exceed one half of the cost of the improvement. The council are as soon as conveniently may be, but not later than three years after the completion of the improvement, to cause to be framed a provisional award describing the lands and premises abutting on or in the neighbourhood of the improvement which, in their opinion, are, or will be, increased in value by or in consequence of the improvement, and stating the amount of the increased value which, in their opinion, will result to the lands and premises described in the said award respectively; the amount of the rent-charge to be apportioned on the lands and premises respectively with respect of such increased value, and the person or persons (whether entitled to the rack-rent or in occupation of or otherwise interested in the lands or premises for the time being) by whom such rent-charge shall be payable, but the award is limited to a scheduled area. This provisional award

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is to be considered by the council, who may by resolution approve it either with or without modification or addition as they think fit. Provision is made for the publication of the resolution, and the service of copies of it on persons interested, for inspection of the provisional award, and for the lodging of objections by any owner, lessee, or occupier of any lands or premises described as being increased in value, on the following grounds:—That any premises included in the award, or that any owner, lessee, or occupier ought to be excluded; that any lands or premises omitted from the award, or that any owner or lessee or occupier ought to be inserted; that the provisional award is incorrect in respect of some specified matter of fact, or in respect of the amount of increased value attributed to the lands or premises; that the alleged increased value, or any part of it, is not attributable to the execution of the improvement; that the rent-charge in respect of any lands or premises ought to be payable for the time being, either wholly or in part, by some person or persons other than as named in that behalf in the award, or interested for the time being in the same, otherwise than as in the award mentioned. Objections are to be heard and determined by the standing arbitrator. In the appointment of the rent-charge, regard is to be had to the greater or less degree of benefit to be derived by any land or premises from the improvement, and to the consideration whether, and to what extent, the increased value in any particular case may be due wholly or in part to causes other than the improvement. The amount defined by the award as the rent-charge in respect of any lands or premises is to be a charge and encumbrance on the freehold of the lands or premises, and the freeholder is to be entitled to redeem. The rent-charge is to be payable from time to time by the persons named or interested as stated in that behalf in the award.

THE ANNUAL MASSACRE OF THE INNOCENTS.

NINE of the inquests recently held by Dr. Macdonald, M.P., coroner for the north-eastern division of the county of London, at various places in his district, have been on the bodies of infants suffocated by their parents on the nights of Christmas-eve, Christmas-day, and Boxing-day. In all these cases the parents —or one of them—were proved to have gone to bed while under the influence of drink, with their children. The juries returned the usual lenient verdicts of "Accidental death."

PUBLIC ANALYSTS AND FURTHER POWERS.

MR. CHARLES E. CASSAL, F.I.C., F.C.S., in his annual report as public analyst for the parish of Kensington, says:—"The extension of public analysis to other articles besides food and drugs—although these afford, as it is, a very wide field of work—is urgently necessary. That necessity has, of late years, been very generally recognized in foreign countries, in some of which the laws against sophistication—using the word in an extended sense—are far more comprehensive and effective than in England. The Select Committee of 1874, upon whose report the Act of 1875 was based, stated, in effect, that the mere existence of the Acts of 1860 and 1872 had done much good, and that (in 1874) the public were, upon the whole, 'cheated rather than poisoned' by adulterators. It is not too much to say, from the experience of analysts in their private capacities, that at the present time, in regard to numerous articles untouched by public analysis, the public are liable to be poisoned as well as cheated, not, of course, 'poisoned' in the violent sense of the term, except in comparatively rare instances, but injured in health by the habitual use of materials and preparations, containing improper, and sometimes absolutely dangerous ingredients; and it appears to me to be the duty of those to whom these facts are known to take every opportunity of impressing them upon public authorities, as well as upon the public at large, with the view of ultimately obtaining satisfactory legislation on the subject." Mr. A. H. Allen read a paper on this subject at the November meeting of the Society of Public Analysts, and recommended that the Council should draft a Bill which would bring under the control of the public analyst many articles which do not come under the denomination of a food or drug. As the result of considerable discussion, in which there was by no means a unanimous feeling, the society thought it not desirable at the present time to take action. What one would desire to see, and every-day experience shows the need of, is the more effectual carrying out of the provisions of the present Act. We fear, however, it is idle to expect much in this direction until we get a more stringent Act, and public analysts are better paid than they are at the present time.

MILK SHOPS IN BRISTOL.

TWO cases of infectious disease in connection with milk shops had recently to be dealt with in Bristol. In one, a case of enteric fever, the sale of milk was stopped during the illness, and the drains were entirely relaid. The inspection of this class of premises has been much facilitated by the appointment of a special inspector for that purpose, and a great many improvements have been effected.

HOUSING THE POOR.

A RECENT prosecution at the instance of the vestry of St. Marylebone illustrates the difficulties in the way of housing the poorest class in the metropolis. A kitchen, let illegally, had for occupants a woman with her three children; the husband, a plumber's labourer, when in work earned 5½d. an hour; he was tramping about the country getting work when he could. Nine weeks' rent were owing. The woman had endeavoured to get another room but had failed because of the fact that she owed rent and had three small children. The landlord, from motives of humanity, had forborne either to press for rent or to turn the tenants out into the streets. These being the facts, the vestry solicitor, instead of asking for a penalty, requested that the case should be adjourned for 21 days, in the hopes that at the end of that time this unfortunate family would be able to vacate the rooms in question.

FINGERS OR FORKS.

THE Chester Board of Guardians have, in obedience to the late but explicit instructions of the Local Government Board, ordered knives and forks for the use of the pauper inmates of the workhouse. We also note with satisfaction that a similar concession

to ordinary decency has been made by the Bangor and Beaumaris Guardians. At one of their meetings one of this body stated that so far the inmates of the workhouse had "to claw their food like savages," there being no knives or forks supplied. This state of things was, with great propriety, very strongly condemned, and it was decided that knives and forks should be ordered. The disclosure of such treatment of paupers goes far to explain the extreme dislike of the decent poor to enter workhouses; and, if not placed beyond the possibility of doubt, would be incredible.

TYPHOID FEVER PREVALENCES.

It is not a little curious and interesting to note that in many of the chief towns of Scotland and the North there has of late been a remarkable increase of typhoid fever cases in some localities. In a report on the health of Aberdeen during November 1889, Dr. Matthew Hay comments on this excess for which no special cause, such as contamination of milk or water supply, could be found. He says, "The disease has almost wholly confined itself to the labouring and artisan classes, and especially to those of them whose housing and sanitary surroundings are not of the most satisfactory kind. In connection with nearly every case a leak in the drains, a choked pipe, an imperfect trap, an unventilated water-closet, a filthy house interior, or other sanitary defect has been discovered. These defects cannot be more numerous at the present time than they have been in the past, considering the enormous labour that is yearly spent by the sanitary staff in rectifying them; and, assuming that the disease is not spreading by personal contagion, of which there is no evidence, the present outbreak is apparently indicative of some peculiar meteorological condition more than usually favourable to the development of the fever, but favourable only where there exists some sanitary defect." Dr. Wallace, of Greenock, writes also much to the same effect. In Dublin the disease has been widely diffused, and no satisfactory reason has been given for its prevalence. Sir Charles Cameron notes, however, that in a large number of cases the patients seem to have been affected while visiting Paris. Belfast has also suffered considerably. There is, therefore, special need at the present time, if an epidemic is to be arrested, of the utmost attention to the cleanliness of food, person, and houses, and to remedying at once all obvious sanitary nuisances such as choked drains, filthy and foul-smelling closets, uncleaned water-cisterns (where they still exist), neglected and over-filled dung and ashpits, and dirty and undrained courtyards.

Lead-Poisoning at Keighley.—It was stated at a recent meeting of the Keighley Board of Guardians that the medical officer had reported that 84 per cent. of the inmates of Keighley Workhouse and Infirmary were suffering from lead-poisoning. The water supplied by the corporation comes direct from the works, and, it is stated, without undergoing any filtering process.

Skimmed Milk in Workhouses.—The Hexham Board of Guardians have wisely adopted the recommendation of their workhouse medical officer, Dr. Stainthorpe, in respect to the milk supplied to the inmates. He suggested that since the workhouse children were generally of low vitality, and skimmed milk is deficient in constructive material, all infants and children up to the age of fourteen years should be supplied with new milk, the adults having skimmed milk as heretofore.

THE PUBLIC HEALTH

During December 1889.

The mean temperature during the month of December at the Royal Observatory, Greenwich, was 37°·6, and was 1°·5 below the average December temperature in 100 years. An excess of temperature prevailed on ten days during the month, while on the remaining twenty-one days it was below the average. The mildest day of the month was the 17th, when the mean was as high as 50°·7, and showed an excess of 10°·2; the coldest day was the 29th, when the mean was only 26°·4, and was 12°·3 below the average. Rain was measured on thirteen days during the month, to the aggregate amount of 1·4 inches, which was 0·6 of an inch below the average amount in the corresponding period of sixty-one years. During the year 1889 the rainfall at the Royal Observatory, Greenwich, amounted to 23·1 inches, which was 2·2 inches below the average amount in the preceding sixty-one years. The sun was above the horizon during 242·7 hours, but only 20·3 hours of bright sunshine were recorded at Greenwich, which was slightly below the average amount registered in the corresponding months of the ten preceding years. The wind was easterly during the first week of the month, after which south-westerly winds prevailed until the 27th, when the wind was again easterly.

In the twenty-eight large English towns dealt with by the Registrar-General in his Weekly Returns, which have an estimated population of upwards of nine and a half millions of persons, 20,754 births and 16,475 deaths were registered during the four weeks ending Saturday, December 28 last. The annual birth-rate, which had been 31·1 and 30·4 per 1,000 in the two preceding months, further declined to 28·3 during the month under notice, and was below that recorded in the corresponding period of any of the seven preceding years, 1882–88. In London the birth-rate last month was only 27·4 per 1,000, while it averaged 29·1 in the twenty-seven provincial towns, among which it ranged from 23·1 in Brighton, 23·5 in Huddersfield, and 24·2 in Bradford, to 33·5 in Sunderland, 34·0 in Birkenhead, 34·3 in Cardiff, and 37·3 in Newcastle-upon-Tyne.

The annual death-rate in the twenty-eight towns, which had increased from 17·0 to 18·4 per 1,000 in the three preceding months, further rose to 22·5 during the month under notice, and exceeded the rate recorded in the corresponding period of any year since 1884. The lowest rate of mortality in these towns last month was 17·2 in Brighton. The rates in the other towns, ranged in order from the lowest, were as follow:—Birkenhead, 18·3; Nottingham, 18·4; Leicester, 18·5; Norwich, 19·2; London, 20·8; Birmingham, 21·2; Bristol, 21·3; Salford, 22·4; Sheffield, 22·6; Cardiff, 22·7; Portsmouth, 23·2; Derby, 23·4; Bradford, 23·5; Huddersfield, 23·6; Sunderland, 24·1; Oldham, 24·6; Halifax, 25·1; Hull, 25·3; Liverpool, 25·6; Leeds, 25·8; Bolton, 26·0; Wolverhampton, 26·1; Newcastle-upon-Tyne, 26·2; Preston, 26·5; Manchester, 29·3; Blackburn, 30·5; and the highest rate during the month, 31·9 in Plymouth. The mean death-rate in the twenty-seven provincial towns was 23·9 per 1,000, while in London, as before stated, it did not exceed 20·8 per 1,000. The 16,492 deaths from all causes in the twenty-eight towns during the four weeks of December included 460 which were referred to whooping-cough, 291 to measles, 263 to scarlet fever, 230 to diphtheria, 165 to "fever" (principally enteric), 138 to diarrhœa, and not one to small-pox; in all, 1,547 deaths resulted from these principal zymotic diseases, equal to an annual rate of 2·1 per 1,000, which was below that in the corresponding period of any year on record. The death-rate in London last month from the principal zymotic diseases was equal to 2·0 per 1,000, while in the twenty-seven provincial towns it averaged 2·2, and ranged from 0·5 in Leicester, 0·6 in Huddersfield, and 0·9 in Cardiff, to 3·0 in Bolton, 3·3 in Wolverhampton, 3·7 in Salford, and 7·0 in Plymouth.

Whooping-cough was the most fatal zymotic disease in the twenty-eight towns during the month under notice.

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The rate of mortality from this disease, which had been 0·28 and 0·35 per 1,000 in the two preceding months, further rose to 0·63 during December, and exceeded the average rate in the corresponding periods of the seven preceding years, 1882–88. In London the death-rate from whooping-cough was equal to 0·67 per 1,000, while in the twenty-seven provincial towns it averaged 0·59, and was highest in Hull, Sunderland, Bristol, and Wolverhampton. The death-rate from measles, which had increased from 0·17 to 0·37 per 1,000 in the three preceding months, further rose to 0·40 during the month under notice, but was less than half the average rate in the corresponding periods of the seven previous years, 1882–88. In London the rate of mortality from measles was equal to 0·40 per 1,000, while it averaged 0·39 in the twenty-seven provincial towns, among which this disease showed the highest proportional fatality in Nottingham, Bradford, Birmingham, and Sunderland. The death-rate from scarlet fever, which had been 0·41 and 0·39 per 1,000 in the two preceding months, further declined to 0·36 during the month under notice, and was considerably below the average rate in the corresponding periods of the seven preceding years. In London the scarlet fever death-rate was only 0·22 per 1,000, while it averaged 0·48 in the twenty-seven provincial towns, among which this disease was proportionally most prevalent in Sheffield, Salford, Birmingham, and Sunderland. The rate of mortality from diphtheria, which had been 0·30 and 0·26 per 1,000 in the two previous months, rose again to 0·31 during December, and exceeded the rate in the corresponding period of any year on record. In London the diphtheria death-rate was as high as 0·40 per 1,000, while in the twenty-seven provincial towns it averaged 0·24, and was highest in Portsmouth, Salford, and Plymouth. The death-rate from different forms of "fever" (principally enteric), which had been 0·30 and 0·27 per 1,000 in the two preceding months, further declined to 0·23 during the month under notice, and was considerably below the average rate in the corresponding periods of the seven preceding years. In London the "fever" death-rate was only 0·16 per 1,000, while it averaged 0·28 in the twenty-seven provincial towns, among which this disease showed the largest proportional fatality in Norwich, Salford, and Sunderland. The rate of mortality from diarrhœa was equal to 0·19 per 1,000, which showed a further decline from the rates recorded in recent months, and differed but slightly from the average. No fatal case of small-pox was recorded in any of the twenty-eight towns during the month under notice; and no small-pox patients were under treatment in the Metropolitan Asylum Hospitals at the end of December. These hospitals contained, however, 1,541 scarlet fever patients on the same date, against numbers steadily increasing from 547 to 1,569 at the end of the six preceding months; the weekly admissions averaged 122 during December last, against 157 and 123 in the two previous months.

The rate of infant mortality in the twenty-eight towns, measured by the proportion of deaths under one year of age to registered births, was equal to 167 per 1,000, and slightly exceeded the average in the corresponding periods of the seven preceding years. In London the rate of infant mortality was 155 per 1,000, while it averaged 176 in the twenty-seven provincial towns, and ranged from 124 in Halifax, 127 in Birkenhead, and 139 in Brighton, to 213 in Preston, 216 in Huddersfield, 228 in Plymouth, and 272 in Derby.

The death-rate from diseases of the respiratory organs, judged by the Metropolitan returns, was slightly below the average during December. The weekly number of deaths referred to these diseases in London averaged 492, and the annual death-rate was equal to 5·9 per 1,000.

The causes of 375 of the 16,475 deaths in the twenty-eight towns during the four weeks of December were not certified, either by registered medical practitioners or by coroners. These uncertified deaths were equal to 2·3 per cent. of the total deaths, a higher proportion than in any previous month of last year. In London the proportion of uncertified deaths was only 1·0 per cent., while it averaged 3·2 in the twenty-seven provincial towns. Among these provincial towns the lowest proportions of uncertified deaths were recorded in Plymouth, Bolton, Birkenhead, and Sunderland; the highest in Brighton, Sheffield, Oldham, Huddersfield, and Liverpool.

Among the population living in the outer ring of suburban districts around London, estimated at upwards of one and a quarter million of persons, the annual death-rate from all causes during December did not exceed 18·1 per 1,000, which, with one exception, was below that in the corresponding period of any year on record. During the four weeks ending December 28, 59 fatal cases of whooping cough, 38 of measles, 37 of diphtheria, 21 of scarlet fever, 14 of diarrhœa, 13 of "fever" (principally enteric), and not one of small-pox, were recorded in the outer ring; in all, 182 deaths resulted from these principal zymotic diseases, equal to an annual rate of 1·8 per 1,000, which was below the average in the corresponding periods of recent years. Compared with the preceding month, the fatality of measles, diphtheria, and whooping-cough, showed an increase, while that of the other zymotic diseases showed a decline. Of the 59 deaths from whooping-cough, 10 occurred in West Ham, 9 in Croydon, and 5 in Stratford sub-districts. The 37 deaths from diphtheria included 8 in Tottenham, 4 in Croydon, and 4 in Brentford sub-districts; and of the 38 fatal cases of measles, 11 were recorded in Walthamstow, 7 in Croydon, and 7 in West Ham sub-districts.

ELECTRIC LIGHTING.—Mr. Edison, in his recent visit to London, is said to have been greatly struck with some enormous plant he saw in course of erection for electric lighting purposes, capable of supplying an alternating current of 10,000 volts, and the dynamo is about 40 ft. high. "I looked it all over," Edison is credited with saying; "then they asked me what I thought of it. I was thinking of the eighth of an inch of hard rubber between that current and human life, and I told them that when they had it complete they had better move their families into a powder magazine!"

THE new public garden in Duke Street, Grosvenor Square, comprises a little more than one-third of an acre, and consists of grass and plane trees, with broad asphalted paths. In the garden are several seats, including a covered seat in the centre. At the eastern end is a drinking fountain, accessible both from the garden and from the pavement in Duke Street. This open space is part of a general scheme of improvement which embraces also the erection by the Improved Industrial Dwellings Company of large blocks of working-class dwellings named Stalbridge Buildings, Balderton Buildings, Chesham Buildings, and Cavendish Buildings, with others to follow. These will accommodate some hundreds more persons than the improvements will have displaced.

CERTAIN changes in the method of dealing with the courts and alleys adopted in Liverpool during the year 1889 have been attended with very satisfactory results, both in ensuring constant cleanliness in the courts and alleys, and also in economising the time of the inspector by employing it in the most efficient manner. The aim has been to keep the courts and alleys uniformly clean throughout the week, and with this view the district inspectors are instructed that every tenant in each court is in turn to be held responsible for the cleanliness of the court for a period of one week; the inspector records in his visiting book whose turn it is, and duly informs that tenant. Failing compliance with his requirements, an information is laid under a bye-law of the Local Sanitary Act. The magistrate has rendered great help to the sanitary department by imposing a small fine in each case in which this action has become necessary. As a consequence there is a marked improvement in the condition of the courts, and also in the apparent willingness of the people to cleanse them.

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Table showing Sickness and Mortality in Large Towns of England and Scotland during the Month of December 1889.

Towns.	Estimated Population middle of 1889.	Small-pox.		Scarlet Fever.		Diphtheria.		Typhus Fever.		Enteric Fever.		Cholera.		Relapsing Fever.		Puerperal Fever.		Totals of Preceding Columns.		Annual Rate per 1,000 Persons Living.		Deaths from other Zymotic Diseases.				Total Mortality from all Causes per 1,000 Persons Living.
		Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Ill-defined Fever.	Measles.	Whooping-cough.	Diarrhœa.	
Aberdeen	121,448	—	—	9	2	6	1	3	—	15	2	—	—	—	—	—	1	33	6	3·2	0·6	—	3	—	6	22·3
Accrington	39,000	—	—	10	—	—	—	—	—	1	—	—	—	—	—	—	—	11	—	3·3	—	1	—	—	3	15·7
Ashton-under-Lyne	40,488	—	—	3	—	—	—	—	—	7	2	—	—	2	—	1	—	13	2	3·8	0·6	—	—	—	1	25·3
Barrow-in-Furness	50,000	—	—	13	2	1	—	—	—	9	1	—	—	—	—	1	—	24	3	5·7	0·7	1	—	—	1	18·8
Birkenhead	102,300	—	—	21	2	8	2	—	—	14	4	—	—	—	—	—	—	43	8	4·9	0·9	—	1	6	—	17·5
Blackburn	122,000	—	—	57	8	—	—	1	—	11	3	—	—	—	—	—	—	69	11	7·4	1·2	—	6	5	1	30·4
Blackpool	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bolton	114,670	—	—	112	7	7	1	—	—	10	1	—	—	1	—	—	—	130	9	14·8	1·0	—	3	14	1	25·6
Bradford	235,056	—	—	24	2	1	—	—	—	5	1	—	—	—	—	—	—	30	3	1·7	0·2	—	17	6	3	23·5
Burnley	80,000	—	—	84	5	1	—	—	—	8	—	—	—	—	—	—	—	93	5	15·2	0·8	—	—	1	4	24·5
Burton-on-Trent	47,493	—	—	22	2	1	—	—	—	—	—	—	—	—	—	—	—	23	2	5·7	0·5	—	5	1	—	23·6
Bury	60,359	—	—	6	—	1	—	1	1	2	3	—	—	—	—	—	—	10	4	2·2	0·9	—	—	—	2	27·4
Cheltenham	46,950	—	—	2	—	1	—	—	—	1	—	—	—	—	—	—	—	4	—	1·0	—	—	—	1	—	13·8
Chester	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Croydon	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Darwen	34,500	—	—	8	1	—	1	—	1	3	—	—	—	—	—	—	—	11	3	3·9	1·1	—	—	1	—	20·4
Derby	98,525	—	—	31	1	5	2	—	—	5	—	—	—	—	—	—	—	41	3	5·4	0·4	1	2	2	—	23·4
Dewsbury	33,000	—	—	2	1	5	2	—	—	5	—	—	—	—	—	—	—	12	3	4·3	1·1	1	5	—	1	27·1
Dundee	163,300	—	—	14	—	10	6	—	—	7	—	—	—	—	—	1	—	32	6	2·3	0·4	—	—	7	2	22·9
Edinburgh	266,900	—	—	139	2	32	9	2	1	32	2	—	—	—	—	—	—	205	14	9·0	0·6	—	51	27	4	23·6
Greenock	78,248	—	—	28	2	5	4	—	—	12	3	—	—	—	—	—	—	45	9	6·0	1·2	—	—	6	2	18·3
Guildford	13,428	—	—	1	—	2	—	—	—	—	—	—	—	—	—	—	—	3	—	2·6	—	—	—	—	—	27·2
Halifax	81,200	—	—	6	1	4	—	—	—	9	1	—	—	—	—	—	—	19	2	3·1	0·3	1	—	—	2	24·5
Hartlepool	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Heywood	25,000	—	—	—	—	1	—	—	—	1	1	—	—	—	—	—	—	2	1	0·9	0·5	—	—	—	—	16·5
Huddersfield	92,825	—	—	8	—	2	1	—	—	4	1	—	—	—	—	—	—	14	2	2·0	0·3	—	—	1	1	23·3
Jarrow	31,000	—	—	—	—	—	—	—	—	3	1	—	—	—	—	—	—	3	1	1·3	0·4	—	1	3	—	22·3
Kngstn.-on-Thames	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Lancaster	27,740	—	—	17	—	—	—	—	—	1	—	—	—	—	—	—	—	18	—	7·6	—	...	...	...	...	...
Leek	13,700	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	2	—	1·7	—	—	—	1	1	25·4
Leicester	150,520	—	—	40	1	6	2	—	—	11	2	—	—	—	—	—	—	57	5	4·9	0·4	—	—	1	—	21·5
Llandudno	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	18·4
Llanelly	22,828	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	...	...	...	...	...
Macclesfield	37,514	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	0·3	—	—	7	4	1	29·9
Manchester	378,800	—	—	134	13	34	13	—	—	37	10	—	—	—	—	2	1	207	37	7·1	1·3	—	5	10	9	23·6
Nelson	16,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	—	5	10	9	29·3
Newcastle-on-Tyne	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Norwich	94,510	—	—	15	—	21	2	—	—	14	3	—	—	—	—	—	—	50	5	6·9	0·7	...	...	...	...	...
Nottingham	237,812	—	—	111	6	10	—	—	—	22	2	—	—	—	—	—	—	143	8	7·8	0·4	—	3	—	—	19·2
Oldham	142,405	—	—	20	2	4	3	—	—	5	1	—	—	—	—	1	2	30	8	2·7	0·7	—	17	4	8	18·3
Portsmouth	141,254	—	—	56	—	13	6	—	—	16	3	—	—	—	—	—	—	85	9	7·8	0·8	—	1	4	3	24·6
Preston	104,194	—	—	21	3	3	3	—	—	10	2	—	—	—	—	—	—	34	8	4·3	1·0	1	—	9	3	23·2
Reading	60,654	—	—	1	—	1	1	—	—	—	—	—	—	—	—	—	—	2	1	0·4	0·2	—	2	—	6	25·4
Ripon	7,670	—	—	—	—	1	1	—	—	—	—	—	—	—	—	—	—	1	1	1·5	1·5	—	—	—	—	13·6
Rotherham	36,482	—	—	8	—	—	—	—	—	1	—	—	—	—	—	—	—	9	—	3·2	—	—	—	—	—	16·9
Salford	234,283	—	—	81	14	39	18	—	—	22	10	—	—	—	—	1	—	143	42	7·2	2·1	—	3	11	8	25·0
Stafford	20,600	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	1	—	0·6	—	—	4	—	21·5
Stalybridge	27,938	—	—	15	1	1	1	—	—	—	—	—	—	—	—	—	—	16	2	7·5	0·9	—	—	—	—	20·0
Sunderland	134,193	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	—	1	2	2	23·3
Torquay	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Wakefield	33,360	—	—	19	2	1	—	—	—	—	—	—	—	—	—	—	—	20	2	7·1	0·7	...	...	...	...	...
Warrington	48,200	—	—	24	6	1	1	—	—	6	—	—	—	—	—	—	—	31	7	8·4	1·9	—	1	—	—	23·3
West Ham	180,000	—	—	74	3	19	1	—	—	13	5	—	—	—	—	1	2	107	11	7·8	0·8	—	21	5	1	34·4
Weymouth	14,008	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3	13	3	21·9
Wigan	53,767	—	—	5	1	1	1	—	—	3	3	—	—	—	—	1	—	10	5	2·2	1·1	—	—	—	—	21·8
Willesden	52,915	—	—	19	—	8	1	—	—	—	—	—	—	—	—	—	—	28	1	6·9	0·2	—	1	—	—	22·8
York	75,327	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	—	—	3	2	14·3

NOTIFICATION OF INFECTIOUS DISEASES
IN 46 URBAN SANITARY DISTRICTS.

THE table on page 332 contains uniform statistics relating to sickness and mortality in forty-six of the fifty-eight urban sanitary districts of England and Scotland in which the notification of infectious diseases is compulsory. The population of the towns for which we are enabled to publish complete statistics for the month of December is estimated at upwards of four millions of persons. The annual rate of mortality from all causes in these towns during the month under notice averaged 23·9 per 1,000, against 17·4, 18·0, and 18·7 in the three preceding months. This death-rate exceeded by 1·4 per 1,000 the mean rate last month in twenty-eight of the largest English towns, which was 22·5 per 1,000. The rates of mortality during the month under notice were considerably below the average in Reading, Cheltenham, Willesden, Accrington, Heywood, Ripon, and Birkenhead; while they showed an excess in Guildford, Bury, Manchester, Llanelly, Blackburn, and Warrington. The death-rate from the eight infectious diseases dealt with in the table averaged 0·78 per 1,000, and showed a further decline from the rates recorded in recent months. No deaths from any of these infectious diseases were registered during last month in Accrington, Cheltenham, Guildford, Lancaster, Leek, Llanelly, Macclesfield, Rotherham, or Weymouth; whereas they caused the highest rates in Manchester, Ripon, Wakefield, and Salford. Scarlet fever showed the highest proportional fatality in Bolton, Burnley, Blackburn, and Warrington; diphtheria in Portsmouth and Salford; enteric fever in Bury; measles in Dewsbury, Edinburgh, Llanelly, and Warrington; and whooping-cough in Barrow-in-Furness, Edinburgh, Warrington, Rotherham, and Llanelly. Two deaths from puerperal fever were recorded in Oldham, and 2 in West Ham. With reference to the notified cases of infectious diseases in these towns during December, it appears that the proportion of the population reported to be suffering from one or other of the eight diseases specified in the accompanying table was equal to 5·9 per 1,000, against 9·0, 8·3, and 7·7 in the three preceding months. No case of any of these diseases was reported during the month under notice in Stafford, Weymouth, or Llanelly, and only one in Ripon and in Macclesfield; and while the proportion did not exceed 2·0 per 1,000 in Bradford, Cheltenham, Heywood, Jarrow, Leek, and Reading, it ranged upwards in the other towns to 7·8 in Nottingham, in Portsmouth, and in West Ham, 8·4 in Warrington, 9·0 in Edinburgh, 14·8 in Bolton, and 15·2 in Burnley. Scarlet fever was proportionally most prevalent in Blackburn, Edinburgh, Nottingham, Warrington, Lancaster, Bolton, and Burnley; diphtheria in Manchester, Portsmouth, Edinburgh, West Ham, Salford, and Norwich; and enteric fever in Birkenhead, Dewsbury, Ashton-under-Lyne, Barrow-in-Furness, and Norwich. No case of small-pox was notified during the month in any of the sanitary districts.

During the fourth quarter of 1889 the rate of mortality in these urban sanitary districts was equal to 20·1 per 1,000, which exceeded by 0·7 the mean rate during the same period in the twenty-eight large English towns. With regard to the proportion of deaths to notified cases during the three months ending December last, it appears that the mortality from scarlet fever was equal to 6·5 per cent. of the cases notified; from enteric fever to 17·6 per cent., and from diphtheria to 27·7 per cent. The proportion of deaths to notified cases of each of these diseases showed an increase upon that recorded in the preceding quarter.

THE Corporation water supply of Huddersfield seems during the last few months to have been again acting somewhat freely upon the lead of the service pipes, and several cases of lead-poisoning are reported to have arisen in consequence.

SPECIAL REPORTS, ABSTRACTS, &c.

PROCEEDINGS OF THE SOCIETY OF MEDICAL OFFICERS OF HEALTH.

THE sessional meeting of the Society, on Friday, December 13, was held at the Scottish Corporation Hall, Crane Court, Fleet Street. Present: HENRY E. ARMSTRONG, President (in the Chair), W. H. Corfield, T. Orme Dudfield, Vice-Presidents, Drs. Rowlands, Woodforde, Corner, Bate, Kempster, Newsholme, Willoughby, Yarrow, St. C. Shadwell, Gwynn, Lawless, R. Dudfield, and Sykes (hon. sec.).

Papers were read by Dr. REGINALD DUDFIELD and Mr ST. CLAIR SHADWELL as follows:—

SOME SUGGESTIONS FOR THE REVISION OF THE TABLES OF BIRTHS AND DEATHS, MORE ESPECIALLY OF THE TABLE OF DEATHS FROM ALL CAUSES. By REGINALD DUDFIELD, M.B., M.A., Camb.

Dr. DUDFIELD observed that there was a strong feeling among sanitarians and statisticians that the tables of deaths hitherto in use needed revision, and that such revision should be completed in time for adoption at the next census. Difficulties, he admitted, were involved in any changes, but, as the Registrar-General had stated in his report in 1881, such difficulties in the way of making serial comparisons already existed owing to the varying fashions or caprice of the profession at large, or of individual members, by which, for example, the majority of cases of diseases of the respiratory organs would at one time be put down as bronchitis, and at another as pneumonia, while the general progress made in accurate diagnosis tended to an apparent increase in the numbers of deaths due to more definite causes with a corresponding reduction of indefinite returns.

This Society had, so long ago as 1874, issued a series of statistical tables with a view to securing uniformity among the reports of medical officers of health, and in 1881 the Registrar-General for the first time tabulated the deaths of the year on a plan suggested by Dr. Farr in 1856. These two tables together, one showing his proposed changes, Dr. Dudfield has printed in parallel columns.

In any case, two classifications must be set forth, one which he would call Table A, or the minor scheme, for the use of medical officers of health to towns or subordinate districts, and the other, Table B, or the major scheme, for use by county officers and the Registrar-General himself. They would differ in the minuteness or number of sub-divisions, but otherwise correspond. At present the Registrar-General's minor scheme comprised 117 headings, and his major 278.

To give real value to the numerical returns of births and deaths, information must be supplied as to the circumstances and conditions under which the people live. Such information should comprise the area of the whole district, and that of open spaces in towns, the population arranged under each sex and according to age groups; the number of inhabited houses and the average number of persons to a house; the density of the population or number of persons to an acre; the increase or decrease of the population since the last census, and the mean height of the district above the sea level, with other facts affecting their material and social conditions.

Dr. Dudfield quoted from Mr. Noel Humphreys that "No health officer's report should be deemed complete without rates of mortality at groups of ages, viz. the proportion of deaths at such ages to the estimated numbers living at the same groups of ages." This was especially necessary and instructive in the case of infants under 1 year, and of children under 5 years of age. To give, as was too commonly done, the proportion of such deaths to the total population or to the total deaths at all ages was useless, since the varying proportions of children to adults in different communities deprived such calculations of all value as indications of the sanitary condition of the population.

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The local meteorological phenomena of the year should be recorded according to Mr. Glaisher's tables, either by an assistant of the medical officer or by some other regular and trustworthy observer.

After criticising some points in the tables of the Society, Dr. Dudfield proceeded to make some remarks on the changes he proposed. Retaining for convenience the term zymotic, he would divide the class into three groups: (1) specific febrile, (2) specific neoplastic, and (3) zootrophic; group 2 including syphilis and tuberculosis, and group 3 those diseases of animals communicated to man by personal contact. The word zootrophic occurs in Plato in the sense of "connected with the keeping of animals." Several of the alterations he suggested had reference to the employment of the names of symptoms as those of diseases, and such expressions as "simple continued fever," which merely covered imperfect diagnosis. He made certain suggestions as to the qualifications and duties of superintendent registrars, and desired that more definite instructions should be promulgated as to the selection of one of several concurrent or consecutive diseases as the actual cause of death. He thought that the best course to secure a uniform classification of causes of death which should be so far as possible at once pathological and ætiological would be to convene a conference of representatives of the principal sanitary and statistical societies with others from the College of Physicians; such classification to include major and minor schemes.

Discussion.

In the discussion which followed Drs. Woodforde (Berks), Gwynn (Hampstead), Willoughby, Newsholme (Brighton), Sykes (St. Pancras), and Prof. Corfield took part, criticising Dr. Dudfield's arrangement in some of its details and descriptions.

Dr. Newsholme pointed to the necessity of breaking up the zymotic group in the reports of medical officers of health, since some diseases, as scarlatina, whooping-cough, and measles bore no relation to the sanitary conditions of the population such as diarrhœa and diphtheria, enteric and typhus fever clearly had.

Drs. Corfield and Sykes considered that the medical officer of health had no interest in a large proportion of deaths due to "other causes" which he might lump together; in fact it was only with the preventible diseases, zymotic, respiratory, and a few more, that he was concerned.

The general feeling of the members was that pending a revised classification, medical officers should adhere as closely as practicable to the arrangement of the Registrar-General.

Mr. St. Clair Shadwell then read a short paper on "The Need for Infectious Hospitals in the Suburban Districts of the Metropolis," in which he insisted on the necessity that still existed for educating the public into the belief that infectious hospitals were not centres of contagion, but rather means for isolating dangerous cases. London was already provided with such hospitals, but with few exceptions the suburban districts were not, though their populations were increasing with extraordinary rapidity. The eastern extra-metropolitan suburbs, for instance, had in 1861 a little over 80,000 inhabitants, in 1871 over 96,000, and in 1881 no fewer than 200,000, while, by the present time, there were probably double that number; and Dr. Airy had shown that the mortality from diphtheria had risen from 0·07 to 0·042.

The advantage of living in the purer air of the country was neutralized by over-crowding, which rendered isolation impossible. He, supported by the Local Government Board, had for several years urged the necessity for an isolation hospital, but in vain; the cost and the cry for a reduction of the rates deterring the local authorities.

Section 131 of the Public Health Act empowered local authorities to combine for this purpose, while by section 189 the Local Government Board could compel such combination, and he thought that they should be called on to exercise that power, though, in his opinion, the charge should, like that of lunatic asylums, be laid on the county rate; fever patients being more dangerous to the community than lunatics.

Two cases of scarlatina in a dairy farm had been to his knowledge the cause of a large number, including several deaths, in his own district, and for aught he knew of many more in London, whither the milk was sent.

SOCIETY OF MEDICAL OFFICERS OF HEALTH (BIRMINGHAM AND MIDLAND BRANCH).

The annual meeting of the Birmingham and Midland Branch of the Society of Medical Officers of Health was held on January 2, at the Council House; Mr. Hollingshead presiding. There were also present Drs. A. Hill, Bostock Hill, H. Underhill (Tipton), Dr. Page (Redditch), Welch (Handsworth), and Mr. May (Aston).

The Hon. Secretary's report stated that the branch now consisted of 25 members, and during the year the meetings had been better attended than formerly, and greater interest had been taken in the discussions. The financial statement showed a balance in favour of the society of £13 17s. 6½d.

On the motion of Dr. Bostock Hill, seconded by Dr. Underhill, the report and balance-sheet were adopted.

The Chairman proposed the election of Mr. Henry May as president for the ensuing year, and said that if anyone was entitled to the honour it was Mr. May. He had acted as secretary for several years, and had always taken the deepest interest in the society's welfare.

Dr. Underhill seconded the motion, which was carried.

Mr. May took the Chair, and after thanking the members for electing him, proposed a vote of thanks to the retiring president. When that society was turned into a branch some two years ago he had some misgivings as to its success, but those misgivings had all been swept away by the success of the past two years, due to their indefatigable secretary, and to Dr. Bostock Hill and Mr. Hollingshead.

Dr. Alfred Hill seconded the resolution, and bore testimony to the zealous manner in which Mr. Hollingshead had filled the duties pertaining to the office of president. It seemed a pity that their rotation took place so rapidly.

Mr. Hollingshead, in reply, said he hoped during the year more papers would be read by the members.

Dr. Underhill was re-elected vice-president. Votes of thanks were passed to Dr. Page and Dr. Bostock Hill for their services as secretary and treasurer respectively, and those gentlemen were re-elected to the offices named.

The President read a paper on—

"The Isolation of Infectious Disease in Hospitals."

He pointed out that as early as 1871 the main principles governing the provision of infectious hospitals was set forth in a memorandum of the Privy Council. Since the publication in 1882 by the Local Government Board of Dr. Thorne's elaborate report on the use and influence of hospitals for infectious diseases the practice of isolation had been adopted in a considerable number of towns throughout the country, though there were not many hospitals to which he could refer as suitable and efficient. The information contained in that report served as a valuable summary of the practical experience acquired on the subject, and the principles it illustrated and enforced had been embodied in a large number of first-class hospitals which had since been erected. During the same period public opinion had also made a rapid advance in appreciating their utility. A sanitary authority which had not made any provision, either directly or indirectly, for isolating cases of dangerous infection was now regarded as having neglected an obvious public duty, and the growth of popular sentiment in favour of sending infectious cases to hospitals was remarkable. While the provision of a well-appointed hospital at the

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public cost was rightly regarded as the most important of the sanitary measures required to be taken by local authorities to ward off epidemics and prevent the spread of infection, it was only one of a number of measures which practically constituted a chain in which every link was necessary. It was very desirable that they should recognize the part which isolation played in preventing the spread of infectious disease. Take, for example, the most virulent of modern infectious diseases—small-pox—which lent itself so well to control by proper measures that they might fairly hope to stamp it out altogether. By means of the operation of the compulsory vaccination laws, and the prompt isolation of first cases, small-pox had been practically banished from that population of half a million, and he saw that during the quarter ended Michaelmas, 1889, although there were 3,282 deaths from other zymotic diseases in the dense population of the metropolis, there was not one from small-pox. Isolation had also contributed largely towards stamping out typhus and relapsing fever in places where they were formerly endemic. Though scarlet fever was not regarded as a manageable disease at all until recent years, a large amount of sanitary effort was now directed to preventing its spread with most encouraging results. Though much had been done towards limiting the extension of this disease by isolation at home and careful disinfection, its infection was so diffusible and intense, and the period of infectiousness so prolonged, that the isolation which hospitals afforded could alone be regarded as effectual. Typhoid fever, diphtheria, and membranous croup were infectious diseases in which isolation could not take so prominent a place in their prevention as in those he had mentioned, since other causes produced them besides infection from person to person, and this was of moderate intensity. He was of opinion that cases of these diseases, when not treated at home, might be safely and wisely treated in cottage or ordinary hospitals, and that it was not the obvious duty of sanitary authorities to make special provision for their isolation and treatment at the public cost, although there could be no objection to utilising available accommodation for the purpose. Dr. May went on to discuss the arrangements which ought to be carried out in connection with infectious hospitals, and the relation to them of the medical officers of health. He urged the desirability of probationary wards and nurses being provided to receive the frequent mistaken and doubtful cases which were sent in, and he also argued in favour of a graduated charge for the patients. This policy had been adopted in the manor of Aston, the Guardians making a payment for destitute cases; and his experience was that though there were many difficulties of detail in arrangements for obtaining a payment—difficulties which were not diminished by the custom to the contrary which prevailed in Birmingham and all the adjoining districts—they were not insuperable.

In a discussion which followed, Mr. HOLLINGSHEAD urged that it was desirable to go further than the president advocated. He should like to see a hospital for the isolation of measles and diphtheria. Many epidemics of measles might be prevented by the isolation of the first cases. He was opposed to exacting a payment for patients in the public hospital, as it wound tend to hinder its usefulness.

Dr. BOSTOCK HILL said he agreed that an infectious hospital established by the sanitary authority should be free. It did not exist for the benefit of the individual, but for that of the public, and it should be paid for by the public. With regard to hospital management, he urged that care should be taken that patients were not sent straight from the infectious wards to their homes, but should pass some days in an intermediate ward. With regard to diphtheria, he believed they were only just awakening to its highly infectious character—of the necessity of isolating it as they did scarlatina and small-pox.

Dr. ALFRED HILL said that there was no doubt a remarkable development of sanitary precautions had taken place during the last few years. No doubt it was exceedingly difficult to go faster than public opinion; but at the same time they could shape public opinion. With regard to hospitals, where there were none hospital treatment at home was exceedingly desirable and beneficial. If medical officers were made aware of any infection they could take hospital precautions and other measures of an important sanitary nature, and probably cut off the spread of the disease. Speaking of the notification of diseases, he maintained that that alone would rouse authorities and cause them to establish hospitals. They could not go on receiving notification of dangerous diseases and being plainly told that they ought to be isolated without providing the means. With respect to payment, he disagreed with the president. In Birmingham they very early found it would not work; the fee was a deterrent. Instead of 400 or 500 patients in the city hospital, if fees had been charged they would not have had more than 40 or 50. What they had to do was to protect the public health, and they took these people away from their homes for the benefit of themselves and the community at large. If the better-to-do class of people cared to pay £3 or £4 per week for special accommodation, no doubt it could be provided, but for the general public no charge should be made.

THE ASSOCIATION OF PUBLIC SANITARY INSPECTORS OF GREAT BRITAIN.

AT the Ordinary Monthly Meeting, held on Saturday, December 7, the Chairman, Mr. HUGH ALEXANDER, presided, and there was an attendance of nearly sixty.

The following inspectors were duly proposed, and elected members of the Association:—Mr. Allan Greenwell, Thakenham Rural, Sussex; Mr. T. H. Kassell, Kirby Lonsdale, Westmoreland: Mr. W. K. Thomas, Clifton, Bristol; Mr. Thos. Lloyd, Stourport, Worcestershire; Mr. Thos. Lightfoot, St. Margaret and St. John, Westminster.

Mr. TIDMAN said that on December 6, at the Clerkenwell Police Court, in the hearing of a case as to insanitary premises, several experts had given contradicting and conflicting evidence, and that thereon the magistrate suggested the appointment of an independent and impartial expert to examine the premises. The opposing counsel and the magistrate then agreed on the appointment of Mr. Hugh Alexander, the Chairman of the Association of Public Sanitary Inspectors of Great Britain. Mr. Tidman, Mr. Stace, and Mr. Abbott spoke of the pleasure with which they saw the announcement of the appointment in the paper, which they regarded not only as an honour to the Association, but also as an honourable recognition of the work their chairman had done, and the position he had attained in the public estimation.

Mr. ROBINS then delivered the following address:—

"REASONS FOR THE ADOPTION OF A UNIFORM TITLE OF 'SANITARY INSPECTOR,' AND SUITABLE TEST EXAMINATIONS."

At the Glasgow Congress of the Sanitary Institute of Great Britain, in 1883, I read a paper on the subject of "The Disabilities of Inspectors of Nuisances, and their remedy," concerning which the *Times* remarked: "The public health is largely a matter of administration, and it is to be expected that those who concern themselves with it should have administrative changes to propose. Mr. Robins, for instance, is properly scandalized at the impotence of the inspectors of nuisances, who are responsible to the local authorities, and who often find themselves awkwardly placed between their duty and their interest, the former bidding them to report against some town councillor or vestryman, and the latter suggesting that if they do, it will be at their peril." This disability is, of course, often shared with the medical officer and surveyor, but in a lesser degree.

In January 1885 I read a paper at one of your monthly sessional meetings, on "The growing importance and responsibility of Public Sanitary Inspectors explained; and their relative improvement in education, position, and

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emolument considered." The conclusions at which I arrived were summarized in the following six propositions:—

1st.—That the primary opening to all the good things to follow was the establishment of a representative Association of Public Sanitary Inspectors.

2nd.—That the call for this action on your part was, and is, the increasing interest of the public in sanitary matters, and the growing importance and responsibilities of public sanitary inspectors.

3rd.—That some of the particular duties hereinbefore referred to, and sketchily passed in review, are of themselves evidence of the variety of technical knowledge and experience required by public sanitary inspectors.

4th.—That the present position of the public sanitary inspector has not improved in proportion to its importance and responsibility, and should be made more independent of the local authority, as suggested in the first report of the Association.

5th.—That to entitle the public sanitary inspector to the confidence of the public, educational classes should be organized by the Association itself, which should become a source of educational advancement to the younger members.

6th.—That in accord with the temper of the times, public sanitary inspectors should be willing to submit themselves for examination to some recognized sanitary authority, whose certificate of competency would have a distinct money value, as a testimonial meritoriously acquired.

The first three propositions call for no remark, but the three last invite further inquiry.

My paper, addressed to the Congress at Glasgow, was an endeavour to procure for sanitary inspectors greater freedom of action in the direction indicated by the 4th proposition. I am not aware that any material concessions have since been made, but I am quite sure that the public is on the side of the inspectors, and is every day becoming more decidedly so.

In relation to the 5th proposition, I shall be glad to learn what steps have been taken by the Association to realise the suggestion made by me, concerning the foundation and organization of educational classes for the benefit of the junior members.

Now, I admit that all such societies as yours are primarily founded for the interchange of personal experience and the advancement of the body corporate, as representative members of the craft. But no society can permanently secure public confidence which does not provide directly or indirectly for its incoming members' educational fitness to be enrolled as members. At the Institute of Civil Engineers there is a students' class of associates, whose members meet to hear and discuss papers among themselves on subjects of general interest and scientific educational advancement.

At the Architectural Association classes are formed and led by elder members on every subject necessary to fit a youth for passing the examinations at the Royal Institute of British Architects (who, by the way, have included sanitation in their curriculum of the examination for all would-be associates of that body). Having for many years acted on the Board of Examiners of the Royal Institute of British Architects, I am able to speak of the great advantage it is to a young man to pass such examinations.

At the Institute of Surveyors sanitation is an important part of their syllabus for examination. But the Sanitary Institute has specially organized a system of examinations for aspirants to the public offices of surveyors and sanitary inspectors, which, since the amalgamation with the Parkes' Museum, it is earnestly hoped will become increasingly useful.

What is your Association doing to fit its junior members for enrolment?

In relation to the 6th proposition, I think the Association may be congratulated upon the number of its members who have successfully passed the examinations of the Sanitary Institute. Since the establishment of your Society, I find that 78 members have passed, or $\frac{1}{5}$th of the whole number of passes, and I hope the number will go on increasing. The Sanitary Institute has held no less than 26 examinations; 566 inspectors applied, and 152 surveyors. The number of passes have been 385 inspectors and 62 surveyors.

How is it that the whole of these 385 inspectors, who have passed the Institute examination, are not enrolled as members of this Association?

In the year 1888, I wrote one of the course of lectures to building and sanitary inspectors on the subject of "Drainage and Construction," which dealt in an elementary fashion with some of the practical details of the science of building, in so far as it behoved the building and sanitary inspector of the day to be well informed.

I do not clearly understand the exact difference between the office of building inspectors and sanitary inspectors. But I suppose when there is no surveyor, or where his other duties are too onerous to allow him to attend to the inspection of buildings generally, such an officer is appointed more particularly in rural districts. You will best know how far it is reasonable to expect a sanitary inspector to be acquainted with building operations.

Your experience will have taught you what is expected of you by what is commonly required of you in the execution of your everyday duties, and the limit to which you are allowed independent action by the officers above you, and to what extent responsibility attaches to you as distinct from that appertaining to the offices of parish surveyor and medical officer, and I have no doubt it varies very much in different parishes by reason of the activity or indolence of the superior officers of the parish. In some cases I can imagine they are practically ignored, and you may report direct to the local board or its clerk.

The more this freedom is exercised the greater is your responsibility, and the more generally informed you should be.

One would like to know exactly the working of the Acts in this respect. The public are, or they are not, very much in the hands of the sanitary inspectors, whose ignorance would be fatal to their usefulness and to the furtherance of sanitary science.

Your Association might, with advantage, institute subjects for competition essays, and might offer prizes, or at least certificates, in acknowledgment of the position taken in the competition. These subjects might be illustrated by sketches, or details of construction, &c. &c.

Education of the right sort is what is now needed most in every branch of intelligent inquiry—that is to say, a thorough practical and theoretical acquaintance with all that relates to the special duties undertaken.

Concentrate your wits in one direction, and follow up all you acquire by persistent practice, so that you may be perfectly reliable on your own subject—in short, be first-rates in some one thing, round which you may accumulate general culture, avoiding dissipation. Less than best comes short of modern requirements.

Examination is all very well, but prior to this technical education is absolutely essential, and no help is so valuable as self-help.

Now, it is very desirable that all should have a clear apprehension of what is covered by the title sanitary inspector, and the first prize essay should be a concise account of what is required to be known in order to fit a man for the said office, to give him the status claimed for him by your chairman of council, and the best means of acquiring such knowledge should also be defined. The competition should be open to all members of the Association.

This brings me to the subject referrod to in the title of this paper, viz. "The uniform title and the test of fitness."

The essays just suggested would indicate what, in the opinion of your own associates, are the particular duties and responsibilities included under this title, what there-

fore it is necessary to know, and where that knowledge is to be gained. The examinations which are now instituted may be made to bring out this knowledge in a more perfect manner than they have yet done, when it is made apparent by actual experience what is felt to be most wanting. Of course, general statements are of no value; what is wanted is a particular curriculum of what it is reasonable to require, and what it is quite possible to find out, and the ground for believing it to be necessary for an inspector's training.

The inspector of nuisances, when first instituted under the late Sir Benjamin Hall's (afterwards Lord Llanover) Acts, entitled "The Nuisances Removal and Diseases Prevention Act," were the humble servitors of the medical officer to be appointed under the said Acts—which became law in 1855. In the eye of the law are they anything more now? If so, what? If not, has custom crept in and made a second law, extending to the sphere of their usefulness and responsibility?

My own experience as an architect, and voluntary labourer among the pioneers of sanitary science so far back as 1852—the results of which labours were published in 1854, under the title of "A Practical View of the Sanitary Question"—led me, and those associated with me, to recognise the much larger duties which must eventually devolve on the inspector of nuisances, and to desire, therefore, that his judicial capacity should be cultivated by a better practical and theoretical acquaintanceship with the principles and appliances of sanitary science generally.

The settlement of the sanitary Acts of Parliament in 1855 gave an ominous rest from aggression in sanitary matters, and little was heard outside the vestries of the working of the Acts for many years, but some notable cases, like that of the illness of the Prince of Wales, at Scarborough, led some professional men to lead a reaction in favour of a more thorough knowledge of applied sanitary science.

The Society of Arts, always to the fore in detecting the time for pressing public improvements, instituted a conference on sanitation, and took the evidence of experts, which was duly recorded in their admirable journal some ten years since.

Your own illustrious President, Sir Edwin Chadwick, the originator and ceaseless advocate of sanitary improvements generally, wrote papers on the "need of specialists in sanitary science," and the Royal Institute of British Architects invited me, in the year 1880, to read a paper "On the Relation of Sanitary Science to Civil Architecture," the discussion upon which paper was continued for three nights, and thereafter every architect of any position has not thought it beneath his dignity to know all about the appliances required for the healthful construction of public and private buildings.

It must be obvious to all, therefore, that the present time, as compared with the time of thirty or forty years ago, is far in advance of anything contemplated by the Acts, which instituted the order of men known as inspectors of nuisances, whose duties then seemed simple enough, and no more than any policeman might be entrusted to see carried out, having relation chiefly to surface cleanliness and the removal of refuse.

But we have now come to know that the greatest sanitary evils are not necessarily those which lie on the surface, but, on the contrary, are those which are hidden from view; we have come to know that the decomposition of material substances in the open air, though bad enough, is infinitely more deleterious where confined to drains and sewers, which become elongated cesspools through inefficient laying or faulty construction. That the concentration and pressure of foul atmosphere in pipes laid on to the houses of the inhabitants, who have no other outfall for waste waters and for solid excreta, is a danger to health only to be averted by special appliances, which were not thought of at the time the office of inspector was established.

For a long time shallow water traps were considered all sufficient protectors, and the syphoning of such traps by the use of the apparatus, or the evaporation of the water itself, was not considered or provided for.

The ventilation of soil-pipes was a thing unknown, and the introduction of inlets for fresh air, and outlets for foul air, were considered refinements rather than necessities of the system of water carriage in house drainage.

The direct laying of pipes from man-hole to man-hole, and the embedding in concrete of pipes under houses; the division of the waste, soil, and water drainage, and their separate ventilation were things undreamt of in those days. The separation of water-closet and drinking water cistern services was not even thought a desirable thing, and the cistern waste was directly connected with the soil drains, and thus the delivery of pure water was a problem left unsolved and uncared for.

The system of testing horizontal and vertical pipes, when completed, as to their impermeability by air or water, was not formulated and was not practised, and there were no Sanitary Protective Associations with staffs of resident and consulting engineers and surveyors; and ventilation generally was, comparatively speaking, ignored.

If I am right in supposing that the knowledge and supervision of such works devolve on you in addition to your other duties, we shall be able to appreciate the wide divergence of the duties and responsibilities of inspectors, as they were then, and as they are now; and it would be only just and fair to recognise the fact in our treatment of these public officers, provided always that they show themselves deserving of it. In the first place, I approve of the adoption of the much more euphonious and comprehensive title of "sanitary inspectors," which has been proposed. You are not now inspectors of nuisances only, you may not have to design or to construct, but you are required to inspect, approve, or disapprove of sanitary work generally, and therefore should be more or less acquainted with sanitary science in its various applications to house drainage and sanitation, to dairies, slaughter-houses, &c. &c., and the detection of impure food.

There may not be much in a name, perhaps, yet, under whatever nomenclature you may be classed, it should be as expressive of your particular work in life as other titles are intended to be; and since you have outgrown the superficial designation, primarily imposed, you may reasonably claim to be recognised by the more appropriate title as aforesaid—namely, "sanitary inspectors."

It may be well at this point to quote the definition of the title, "building inspectors," given by the Council of the Royal Institute of British Architects to the Willesden Local Board, who sought its opinion upon the duties devolving on the officials who should fill that office.

The Council say:—"It appears from your letter that the 'building inspectors' to be appointed under the Willesden Local Board Act, 1887, are to be employed in enforcing the provisions of the Public Health Acts, and of the Local Acts, and of the bye-laws made thereunder with respect to the erection, construction, or alteration of new buildings and the drainage thereof; while under the same clause (A) of the section of the Act to which you refer, it is laid down that 'every candidate for the office of "building inspector" shall be properly skilled and educated in the art and practice of building and drainage,' it consequently follows that in order to perform these duties satisfactorily, the person holding the office of 'building inspector' should possess not only a knowledge of the principles of drainage and of sanitary arrangements as applied to buildings, but also a knowledge of the quality and strength of the various materials employed in building, and of the methods of employing them. He should further have a reasonable acquaintance with the theory and practice of construction, particularly under circumstances immediately affecting the present security and ultimate stability of buildings in regard to the foundations, walls, arches, vaults, floors, and roofs; and he should be cognizant of the means, such for instance, as shoring, which, under specified circumstances of danger, it would be advisable to adopt. It is thus evident that, however small may be the salary

attached to the office of 'building inspector' under the Willesden Local Act, the duties in connection with it are of considerable importance, and similar to those which are entrusted to a 'building surveyor.' The building inspectors under the Act, apparently performing the duties of surveyors, though bearing another name, and nothing less than a general knowledge of the subjects hereinbefore particularized, can be regarded as sufficient qualification for the post."

The Local Government Board agree with the foregoing definition laid down by the Council of the Royal Institute of British Architects, and I should recommend your Association, in like manner, to obtain a similar judicial definition of the duties devolving on you at the present time, and the nature of the qualifications required to carry them out.

Concurrently therewith, however, must come a fitting test of this improved capacity, for the new title involves the recognition by yourselves and by the public generally of considerably increased responsibility.

The test of examination is the popular form, and as before observed, an efficient organization exists in the case of the Sanitary Institute for the due examination of sanitary inspectors, as well as sanitary surveyors, by the most distinguished experts in sanitary science. Concerning this examination, your secretary has drawn my attention to the following clause which occurs in my last address to you, viz. "I hope the Institute will invite this Association to send two representative visitors to witness the examination, when it is not improbable that the Association may find itself in a position to offer valuable practical suggestions. It may also find itself justified in petitioning that one of its council, who shall himself have passed the examination, may be admitted a member of the examining body, if the report of its visiting members should deem such a course desirable, to give increased confidence to the members of the Association who will desire to obtain the benefits of the examination, and the status which it will ultimately confer." I thought I was justified at the time in hoping that such singleness of purpose would distinguish both bodies, but I am not so sure of this now.

I was present at the council of the Institute appointed to receive your deputation, and listened to the full exposition of your views as unfolded by your chairman of council.

I have reason to be assured that the examiners have striven to give effect to your suggestions, by giving more prominence to constructional qualifications in so far as was consistent with the nature of the duties which they considered to belong to you, as distinct from surveyors. Personally, I saw no objection to the form of arrangement of the syllabus suggested by you, and spoke in favour of the extension of the building clauses, since they differed nothing in principle, but were a simple transposition of the old subjects of examination; and more especially since you coupled with your revised syllabus certain propositions, showing your respect for the Institute, as the leading representatives of sanitary science, and your appreciation of its efforts in the matter of the examination; only expressing your earnest desire that that examination should be thorough, and your belief that to successfully carry out its intentions the Institute would soon have to consider the desirability of founding two grades of examination, so as to meet the wants of the apprentices as well as the men in office, who resent being shouldered out of the way by inexperienced young men who have got through the examination, but are, in your opinion, unfit to undertake the responsibilities belonging to a public official, except as assistants—an opinion you are entitled to hold if it pleases you.

Referring to your own amended syllabus, you suggested that "Candidates for the first grade should give proof that they have been fairly educated, and should be examined upon the eleven subjects given in the Institute's amended syllabus, and in addition must possess a knowledge of building construction equal to that required to obtain a first-class elementary certificate of the Science and Art Department."

"Candidates for the second grade should have held the office of sanitary inspector for at least two years, and should give proof that they have been fairly educated. The examination should be based upon the syllabus of subjects for the first examination, but should be of a more advanced character, and in addition, candidates should possess a knowledge of building construction equal to that required to obtain a first-class advanced certificate of the Science and Art Department, and a thorough knowledge of material used in sanitary construction."

Naturally enough there would be great difference of opinion on the propositions here made, and the Association would seem not to have allowed for this circumstance, but to have become intolerant as well as impatient.

For some time past the subject of preliminary and intermediate examinations has taken up the time of the examiners, appointed by the Royal Institute of British Architects, who have elaborated a scheme which was accepted by the council, and was acted upon for the first time in November last.

What the Royal Institute of British Architects has found desirable and necessary to inaugurate, is precisely that which you think the Sanitary Institute should be ready to establish for you, and I am not surprised at this conclusion, the thing is "in the air" as it were.

But have you thought of following up the proposed Sanitary Institute's examination tests by establishing two grades in your own constitution, and will you require one or other of the foregoing tests of capacity to be submitted to, before you enrol future members of the Association of Public Sanitary Inspectors of Great Britain? *Why not thus yourselves draw the line between competent and incompetent men?*

Why should you not say that no full member shall have had less than two years' official experience, having previously passed the Sanitary Institute's final examination, or been at least seven years a recognized and efficient sanitary inspector?

Why not say that no associate member shall be henceforth admitted to your Association, who has not passed the preliminary examination at the Sanitary Institute? And then when you next make your representation to that body, show your willingness so to rehabilitate your own order, that it may embrace the application of the proposed amended system of examinations.

A knowledge of the building trades and of general construction is in my view essential to the sanitary inspector, whose duty it is to distinguish between good and bad materials and workmanship.

In London and other large towns there are the district surveyor, the parish surveyors, the parish architect, and the local medical officer, the solicitor and clerk, besides the various inspectors.

But in country places, a good many offices are often rolled into one, and the inspector has a greater variety of duties, and, consequently, greater responsibility.

Desirable as it may be, it is certainly not essential that he should be able to pass the examination provided by the Institute for surveyors; but unquestionably the difficulties raised by Mr. Alexander, as your representative, would be met by such of the members of your Association passing the examination provided for surveyors, who may consider that a more practical examination is required for inspectors than is necessary in the opinion of the council of the Sanitary Institute, who conceive that the primary duties of the inspectors are to be capable of carrying out, or rather to see carried out, the directions of the medical officer who is presumed to be acquainted with building construction and drainage, &c. &c.

To know when a thing is well or ill done, of course involves acquaintanceship with the best methods of doing it, as I have previously remarked, consequently in-

spectors who can pass the higher examination provided for surveyors are all the more valuable servants, and fitter to make a report or statement of facts, upon which the medical officer or surveyor may be able to advise the local board.

It is obvious that so long as the Sanitary Institute's examinations are open to any one who can pass them, there is nothing to prevent an ardent officer from passing both examinations; and your council might be formed of men who had voluntarily passed the surveyor's examinations, and thus entitled themselves to that distinction.

But the point in dispute, so far as I understand it, is not so much that the examination for inspectors is not stiff enough, that is to say, does not cover so wide a field as some of you very honourably desire, but that you think that sufficient care is not taken in admitting candidates for any examination at all.

And you think that no man, who has not had some experience of, and knowledge of the building trades, should be admitted to the privilege of examination for the office of sanitary inspector. There is much to be said in favour of this view, but it is very debatable ground to take; moreover, it seems to involve the assumption that the certificate that a young man has passed the examination is also a certificate of competency to undertake the office of sanitary inspector, but this is a much larger question, of which the passing of the examination is but a single item.

A boy from school may work up to pass the examination, but he would need other qualifications to fit him for office, yet you would not refuse a pass to any who had won it, surely.

You want a higher certificate, and you suggest a preliminary and final examination; the latter being fitted for men of some experience, and therefore of more service and commanding more respect when accompanied by other testimonials as to personal character.

The Institute, so far as I understand it, has considerable difficulty in providing this intermediate examination between the present inspector's and surveyor's examinations, and up to this time there are few precedents to follow. It is true that the Royal Institute of British Architects has established preliminary, intermediate, and final examinations, but as yet no intermediate examination has taken place, and time must elapse before experience can be gained at its expense.

But I am quite sure that no good will be done by attacking the Institute, and publicly denouncing its claims to the confidence of the public, and holding it up to contempt by passing condemnatory resolutions, deprecatory of its examinations as "not tending to promote the interests of the Public Health, nor to improve the status of the inspectors." Moreover, it is very unfair to those 385 gentlemen, who have studied for and passed the required examination for inspectors, to discredit their hardly-earned certificates in this way. So far as they go they are honourable distinctions which no one can deny, and if they do not go far enough, there is the surveyor's examination to fall back upon, until an intermediate one can be arranged; but if you carefully consider the acquirements insisted on by the Royal Institute of British Architects for "building inspectors," I think you will see that the examination for surveyors, as established by the Sanitary Institute, is the least that can be fitted for candidates for that office; and if you contend that the status of the sanitary inspector is not only equal to, but comprehends that which has been authoritatively defined to belong to the office of "building surveyor," then I cannot see what necessity exists for an intermediate examination at all.

But my recommendation would be—that you should lay before the Royal Institute of British Architects the Acts under which you work and are appointed, and request it to define your position in a similar manner to that in which it so admirably defined that of the "building surveyors," and I shall have much pleasure, as a member of the council of the Royal Institute of British Architects, in forwarding your application, because I am distinctly of opinion that the definition given by the Local Government Board is insufficient, if not absolutely misleading.

Finally, let me add that I am thoroughly convinced that the sanitary Acts of Parliament will never be efficiently carried out so long as the duties and responsibilities of the officers concerned are so indefinitely expressed, and the knowledge required to fulfil them so little understood. Therefore I entirely sympathize with the appeal made by your chairman of council in his able paper on "The Status of Sanitary Inspectors," in which he has conclusively shown that you have no legal status at all commensurate with the duties imposed upon *some* of you.

I think with him, that the duties and emoluments attached to the office should be the subject of *Government inquiry, definition, and amended legislation.*

Until your position is more accurately defined by authority, it will be impossible to establish such a system of examination as might otherwise be easily arranged; and great divergence of opinion will continue to exist with respect to the desirability of accepting the status of sanitary inspectors at their own valuation.

So long as your salaries range from £10 a year to £300, it is obviously impossible, or at least inconsistent, to fix too high a test for examination.

The Sanitary Institute is doing its best to meet the difficulty, and it cannot be the interest of your Society to throw discredit on its earnest endeavours in this direction.

In the meantime it may be wise to accept the examination for inspectors organized by the Institute, at least so far as the 165 officers are concerned, whose salaries are below £150, while those sixty officers whose salaries are above £150 each should pass the examination for surveyors, in addition, since they may be expected to have more responsible duties to perform, akin to those entrusted to "building surveyors."

Since this address was in print, Mr. Alexander has favoured me with a series of printed reports made by him to the medical officer of his district. And if I may take this as a sample of the work to be done by inspectors in London, it is sufficient evidence in favour of his contention, that though it may not be necessary to pass an examination for surveyors, it is essential that metropolitan inspectors at all events should possess the qualifications that an architect would require in a clerk of works, or that a builder would require in a foreman. And it follows that if the examination of the Sanitary Institute does not require candidates to be possessed of so much information as this, then that examination should be supplemented by the first-class certificate in elementary building construction of the Science and Art Department, until such time as the Sanitary Institute may find it convenient to provide an intermediate examination between the present form of examination for inspectors and that of the examination for surveyors.

But in all probability the Institute will prefer to amend the present examination to meet the requirements of the day, and may require each candidate to have some practical knowledge of his business, and give some evidence of his earnestness by the constancy of his attendance upon the various means which are provided for his help in the study of sanitary science in its application to the needs of common life.

At the commencement of the proceedings the chairman read the following letter from the president, referring to his address upon "The Sanitary Institute, its Examinations, and Certificate":—

PARK COTTAGE, EAST SHEEN, MORTLAKE.
November 7, 1889.

DEAR MR. ALEXANDER,

I have perused your address, and entirely agree with all you say. It appears to me that the best course would be to ask Mr. Ritchie to receive a deputation from the Association, in order that an opportunity may be afforded to state the grievances, and, if possible, elicit some promise of remedies, which cannot, I think, well be avoided. It is my duty to do what I can to further the views and wishes of the members of the Association.

Yours faithfully,
EDWIN CHADWICK.

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The CHAIRMAN said: Like myself, I am sure you will regard the address to which we have listened as a valuable contribution by one of our very best friends towards the settlement of that very important question, the status of sanitary inspectors; and if we do not agree in all that has been said, we can all recognise the very great interest which Mr. Robins has taken in our Association, even in its earliest days, when he presided over the first meeting, and when practically the foundation stone of the Association was laid. I shall, therefore, have much pleasure in moving from the Chair that the best thanks of the Association be tendered to Mr. Robins. Previous to doing so, I would like to make a few brief observations on the points brought under our consideration.

Mr. Robins has told you that in my address to the Health Congress at Hastings I conclusively showed that sanitary inspectors have no legal status commensurate with the duties devolving upon such officers; and we are reminded that the Nuisance Removal Acts under which sanitary inspectors were instituted, contemplated the discharge of no more important duties than might be entrusted to any policeman. That is perfectly true. And the effect of that initial mistake has been very disastrous, for it justifies and still continues to justify local authorities in appointing policemen and others at wages which a competent man would not accept. But we have also been reminded that the greatest sanitary evils are those which are hidden from view, and that the detection and correction of such evils requires men of a higher status and greater knowledge, so the men employed should be designated by the appropriate name of sanitary inspector. And in the opinion of Mr. Robins it is essential that sanitary inspectors should possess a knowledge of the building trades, and of general construction. This is very gratifying—and it is very gratifying also, to be assured that the suggestion which your council by deputation made to the Sanitary Institute for the improvement of their examination, received the support of Mr. Robins, and to listen to his testimony to the respect which we have shown, and desire to show, to the Sanitary Institute as the leading representative of sanitary science.

In this we are agreed, and we come now to debatable matters. Mr. Robins has suggested that we should lay our case before the Royal Institute of British Architects, and request that body to define our position, and he has kindly said he would as a member have much pleasure in forwarding our application. This would be a decided advantage if the views we have so clearly expressed were endorsed. If, on the other hand, the Royal Institute of British Architects adopted the opinion of the council of the Sanitary Institute, who, Mr. Robins has told us, are of opinion "that the primary duties of a sanitary inspector is to be capable of carrying out, or rather to see carried out, the directions of the medical officer and surveyor," that would be a result of the most unsatisfactory character to the interest of the public health. This is therefore a matter which requires careful consideration.

There are one or two misconceptions prevailing to which I would like to call attention, and it is somewhat difficult to understand how they have arisen, in view of which let me emphasise. What we say, and what Mr. Robins says, is that a knowledge of the building trade is essential to the sanitary inspector, and we only repeat the language of the Report of "The Royal Commission on the Housing of the Working Classes," of Mr. Cubit Nichols, of Sir Hugh Owen, of Sir Edwin Chadwick, and a host of others. And we suggest that only those who have had practical experience in the building trades, and who in addition thereto hold a first-class certificate of the Science and Art Department in building construction, should be admitted to the examination of the Sanitary Institute. Is it necessary to say to any gentleman, who is thinking of his own personal interest, in connection with the certificate which he has obtained, that this can only apply to future examinations? As that is so, what can the Institute difficulty be: they are not requested to institute an "intermediate examination between the present inspectors and surveyors," and no one desires they should alter their syllabus, all that is needed is to advertise, that henceforth they will be particular in the matter of admission of candidates; until that has been done, I cannot agree that the Sanitary Institute has done its best to meet the difficulty, which it has originated, and for which it is responsible.

At the adjourned meeting of the members of the Association of Public Sanitary Inspectors of Great Britain, held on December 20, for the purpose of further discussing the paper read on the 7th, by Mr. Edward C. Robins, F.S.A., entitled "Reasons for the Adoption of a Uniform Title of Sanitary Inspectors." The Chair was occupied by Mr. HUGH ALEXANDER.

The HON. SECRETARY (Mr. Samuel C. Legge) read a letter from the late sanitary inspector for the district of Chiswick, asking that his name should be removed from the list of members, as he had been forced through ill-health to resign his position as sanitary inspector. The writer also stated that seven years ago he contracted blood-poisoning while engaged in disinfecting a house after fatal cases of scarlet fever and diphtheria. He had suffered more or less ever since, and was now compelled to resign, and the worst of it was that after all his years of service there was no pension to which he was entitled.

The CHAIRMAN moved, as a mark of sympathy with the writer of the letter, that he should remain on the roll as a non-paying member.

The resolution was unanimously adopted.

The SECRETARY next read a letter from the London County Council, in answer to a communication from the Association, recommending the Council to use their influence in bringing about a consolidation of the sanitary laws. The letter stated that the recommendation of the Association had been laid before the Sanitary Committee of the Council, who had from time to time had the matter under consideration, and as opportunity occurred every effort would be made by them with a view of remedying the present unsatisfactory state of the law.

The discussion on Mr. Robins's paper was resumed by Mr. EDWARD TIDMAN, C.E., who expressed himself in favour of purging the examining board of the Sanitary Institute of some of its medical element, and introducing in their place men with a sound knowledge of the actual practical work that a sanitary inspector had to carry out day by day. The work which the sanitary inspectors were called upon to perform was one of the utmost importance to the community, and every man anxious to become an inspector ought to first pass a severer test than was at present required by the Sanitary Institute.

The SECRETARY read a communication from Mr. Davenport, C.E., who was unable to attend, giving his views upon the points raised in Mr. Robins's paper. He was strongly of opinion that the Sanitary Institute should require some evidence of preliminary training or practical experience before admitting persons to their examinations. As far as his own experience went, a knowledge of building construction was most important to an inspector. He was afraid that unless evidence of preliminary training or practical experience was required of candidates the examinations of the Institute would not continue to be held in honour, and it was certainly in the interest of all that they should be so held.

Mr. RICHARDS said he was unable to endorse all the conclusions of Mr. Robins, but he felt that the Sanitary Institute was the centre towards which the Association should gravitate. It consisted of a highly-educated set of men from whom the sanitary inspectors might learn much, while there was a good deal the Institute might learn from the inspectors.

Mr. LEGGE thought it very desirable that the mode of examination should be improved. If one-half of the governing body of the Institute was to consist of practical men, it would give confidence to the sanitary inspectors. He agreed that it was better that they should be known only as sanitary inspectors, and not as inspectors of nuisances.

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The CHAIRMAN said he held it to be of the highest im-

portance that men should not be granted certificates until they had been specially trained. They were entrusted with the care of disease-breeding houses, and how was it possible for a man, perhaps a soldier, or a tinker, or a tailor, after three months' cramming, to be fit to discharge all the duties attaching to such a position.

Mr. ROBINS, in his reply, said he was pleased that his paper had provoked so much discussion. His sympathies were entirely with the inspectors, and he should be glad to do what he could at the Sanitary Institute for them. The assertion he made in his paper, that sanitary inspectors should have some practical knowledge of building construction, he still maintained.

A cordial vote of thanks to Mr. Robins closed the proceedings.

THE HOMES OF THE POOR.

ON January 4, at the monthly meeting of the Association of Public Sanitary Inspectors of Great Britain, the Rev. A. ROBINS, M.A., Chaplain in Ordinary to the Queen, delivered an address entitled,

"HUMAN HOMES FOR THE PEOPLE—THE QUESTION OF THE HOUR."

The Chair was occupied by Mr. HUGH ALEXANDER, and there was an exceptionally large attendance. Mr. C. T. RITCHIE, President of the Local Government Board, wrote stating that he was glad to learn that the Association was to have under consideration a subject of such vital importance as the provision of proper dwellings for the working-classes. The question was one upon which it was very desirable that strong and sound public opinion should be formed, in order that full effect might be given to existing requirements of the law as set forth in the circulars he had recently addressed to the local authorities.

The Rev. A. ROBINS, in commencing his address, said he was convinced that how to get "human homes" for the poor was even at the end of the nineteenth century the question of the hour. In this cause he had himself not only suffered persecution, but had witnessed at the stake a good confession; in other words, he had been publicly burnt for his opinions rather more than three years ago, a portly, inflammable, and highly-combustible effigy of himself having been flung into the flames in what was called the "Cobbler," near to Eton Bridge. He had ventured to ask, "Why should Windsor wait to give human homes to the poor?" (See SANITARY RECORD, vols. xvii. & xviii., Old Series.) That did not please those who were directly or indirectly interested in, and advantaged by rackrenting the poor in huts and hovels, and so around the breast of the burning effigy was written: "Why should Windsor wait?" A few months later the Local Government Board inspectors investigated the matter, and confirmed all that he had said. They were warned that when they approached the question of the better housing of the poor they must not exaggerate. His answer to that was, first, that they who bade them draw it mild were the persons who themselves grew fat on the emaciated, and extorted their percentages from the doomed ones of the slums; and, secondly, that no tongue or pencil could exaggerate the horrors of some of the inhuman homes. He asserted that it was impossible to civilize, humanize, or Christianize where there were slums. They had, indeed, to fight with the infamous indifference of those who, by their own infinite selfishness, brutalized millions. The supreme question of the better housing of the poor had too long been chilled by indifference, silenced by interest, or paralyzed by unconcern. Meat in the markets unscrupulously offered for sale that was not fit for human food was condemned and confiscated. There had been hesitating half-measures enough. There had been a deal too much temporizing, while some municipalities minced matters with the worst moral offenders, and certain vestries were very tender in dealing with some vested interests. Why should not infamous hovels that were infamously offered for human habitation, and that were not fit for human homes, be condemned, and thereupon and thereafter be either mended or ended? The necessity for improving the homes of the people had been confessed by Lord Salisbury, Mr. Gladstone, Lord Randolph Churchill, Mr. John Morley, Lord Hartington, Mr. Goschen, and Mr. Ritchie, and yet nothing was done. All public men urged that the settlement of the question was urgent, and yet, he repeated, nothing was done. The reason strong measures were not taken was because there were tens of thousands in this so-called Christian England who made accursed profits, who waxed rich, and got fat and strong out of the demoralization of the poor in their rack-rented hovels and their inhuman homes: that was to say, the question was unpopular because many municipalities and vestries were interested, directly or indirectly, in keeping things as they were. The inhuman homes of England's poor filled our prisons and our poor-houses. Our herds that fed from patent troughs were, in some cases, a great deal better housed than were the herdsmen, or they would never take a prize. The herdsmen were thrust into hutches in which none but a foolish fancier would put a pedigree rabbit. It was as shamefully true at the close of the nineteenth century in almost every city, town, and village in Great Britain, as it ever was, that the horses of Dives were better stabled, and his dogs better kennelled, than were Lazarus and his belongings housed. In dealing with the evils of the slums, the various permissive Acts dealing with the public health were altogether impotent. The permissive powers given under such Acts must, in his opinion, be made compulsory, obligatory, and peremptory. This, at all events, would give us uniformity throughout the kingdom, whereas at present, while there might be exceptional powers used without flinching or without compromise (as at Glasgow, for example), these Acts were alike administered in scarcely any two places. A considerable proportion of the owners of the slums of England, proprietors of insanitary areas, were themselves members of municipalities and vestries. Before all else the State must review, revise, and consolidate all Acts dealing with the public health, creating the sanitary inspectors officers of the State, and delegating to them not discretionary powers, subject to the pleasure and approval of local sanitary authorities, but compulsory authority to deal with all insanitary areas—the thus consolidated and amended Act declaring and defining what constituted a house, and what a human home must be and what it should comprise. The Local Government Board asserted that the local authorities could deal with insanitary dwellings, and that if they did not do so it was their own fault; but if the powers under the existing Acts were sufficient, why was this intolerable state of things existing all over the country? In 1881 the Local Government Board inspector visited Durham and made many recommendations, and yet only three months ago there were 8,000 inhuman homes in the city. He (the lecturer) was assured by Lord Henry Bruce that there were 50,000 families in the metropolis each occupying only one room. He unhesitatingly declared that, according to his convictions, founded on a wide experience of what must come, nothing less would avail than a simple and complete consolidation of all Acts affecting the public health, substituting throughout that which was obligatory and compulsory for that which was now permissive and discretionary. All medical officers of health must be Her Majesty's medical officers of health, appointed to and set over a city, or town, or a district; and, that they might be thoroughly disinterested, impartial, and independent, that they must be disqualified from taking any private practice. All sanitary inspectors would become Her Majesty's sanitary inspectors, holding their appointments direct from the Local Government Board, and responsible only to the authorities at Whitehall. The Act they would thus be called on to administer would be of no private interpretation in its provisions or exemptions. They must be likewise appointed to and set over a city, a town, or a district What a human home must be and might not be should be by such Act plainly declared and clearly defined; and

undo such Act they should have plenary powers to carry out all its obligatory and peremptory powers. The optional and permissive powers and privileges hitherto delegated to local authorities would, they might be well assured, die hard. There must be, before what he proposed came to pass, a great agitation that would sweep the land to stimulate its highest aims, and purify its truest aspirations. By no other means than those he proposed would there, in his opinion, be human homes where now the rookeries and slums abounded. There must be salvage of the social wreckage that was floating around us before it was engulfed in the deep waters of demoralisation and death. A vast proportion of the dwellings of the poor were morally, socially, and physically slaughter-houses, for did not depravity destroy the poor within them hourly, and slay them day by day.

A discussion ensued, most of the speakers endorsing the views of the lecturer, who was applauded at the close, and the proceedings terminated with a vote of thanks to the Rev. Arthur Robins.

THE ANNUAL DINNER OF THE ASSOCIATION OF PUBLIC SANITARY INSPECTORS (NORTH-WESTERN DISTRICT).

The members of the Association of Public Sanitary Inspectors of Great Britain (North-Western District) held their second annual dinner in the Falcon Restaurant, Lord Street, on December 14. There was a very large attendance, among those present being Dr. J. Stopford Taylor (medical officer of health for the city), who took the chair in the absence of the President, Dr. Alfred Carpenter, of Croydon; Drs. W. Carter, E. W. Hope (assistant medical officer of health for the city), and Mr. F. Vacher (medical officer of health for Birkenhead); Councillors J. Houlding (chairman of the Sanitary Committee, Liverpool), and T. Shaw (deputy chairman of the Health Committee, Birkenhead), Mr. A. Taylor (hon. sec.), and a number of other gentlemen. Letters of apology for non-attendance were read from Sir Edwin Chadwick, K.C.B., T. Pridgin Teale, Esq., Dr. G. A. Kenyon, Right Hon. J. T. Hibbert, Dr. Alfred Carpenter, H. Fletcher, Esq., Duncan Graham, Esq., Mr. Shirley Murphy, Mr. Edward Whitley, M.P., Captain Cotton, M.P., the Mayor of Liverpool (Mr. Thos. Hughes), Alderman Grindley, Councillor J. B. Smith, and several others.

Mr. Vacher, in proposing the toast of the evening, "The Association," said that he remembered when the idea of forming the Association of Public Sanitary Inspectors of Great Britain was first mooted people spoke of it as the happy idea of a few sanguine enthusiasts. He remembered when the Association was actually formed, and when the first transactions came out and showed a very good record of the first year's working. The "wise men of Gotham's" comment then was, "Oh, that 's the first year; anything will do well in the first year. We will see how it will go on." He remembered how the cavillers were shortly afterwards silenced when it was indisputably proved to them that the public sanitary inspectors meant business, and when it was shown that they had the friendship and support of some of the best men of sanitary science in the kingdom, such as Sir Edwin Chadwick, Dr. Benjamin Ward Richardson, Dr. Alfred Carpenter, and others. People saw then that they had good friends at their back, and that with or without such support the sanitary inspectors were well able to look after themselves, and were well able to organize for the benefit of themselves and the public. When the Association came to be formed and was a going concern, some of them must have wondered how they had been able to go on so long without an association, how it was that sanitary inspectors had done at all without some organisation of the kind. He thought it would not be difficult to prove, if there were any need to do so, that an association of this kind was really necessary. He might venture perhaps to put forward a few propositions which at all events would go far towards proving this. The profession of sanitary inspectors was a comparatively new one—that was to say, it was new when compared with other professions. All other professions, he thought, without a single exception, had found it necessary to organize—to have associations in order to bring the individual members of the profession into juxtaposition, to facilitate intercourse and discussion, to rub off, as it were, men's corners and to enable them to work together comfortably. What other professions had done their profession had done; and he saw no reason why the profession of sanitary inspector, with such an organization as theirs, should not have a prosperous career before it. The second motive or reason for an association of this kind was that their interests were apt to be neglected unless they could combine and look after them. Their interests as sanitary inspectors would, sooner or later, want looking after. Possibly they might want the Government to recognize them in a better way than they were recognized at the present time. They might want a special Act of Parliament. At all events they might want concessions and protection which could only be obtained by means of an organization, and which certainly could not be obtained if they were merely individual members of the profession of sanitary inspectors throughout the kingdom. The third reason why such an association should exist was that they were not merely ordinary professional men, but they were in the position of specialists and experts, and were continually engaged in research, occupied in making experiments in physics. How were they to make the results of their experiments tell as they ought to tell unless they had some sort of a society such as this to put their work together and to show it, and make it take its proper place in the world of science? There was a science which, for want of a better name, was called sanitary science, which combined portions of a good many sciences, and the quota they contributed towards that science would be the means of their organization becoming appreciated. The fourth reason, perhaps as important a one as the others, why an organization of this kind was necessary and desirable, was that they were enabled in this way to meet together for social intercourse; they were in evidence, as it were, before the public. Reporters attended their meetings when there were papers read and discussed and lectures delivered, and when they showed the results of their work, and those results were presented, through the medium of the newspapers, to the public. In that way they were enabled to take their part in the education of the ordinary British householder, the housewife, housemaid, cook, &c. It was their pride that their profession was one that was preventive rather than curative. He regretted to say that at the present time a good deal of their routine work was curative. They had to go round and discover what mistakes builders had made in erecting houses, &c., and they had to see how it was that landlords accommodated their tenants with fever, sewer gas, and many other things which they held to be certainly not the necessaries of life. It was their duty to point out now how these defects might be remedied, and that they did so effectually he thought most of them knew. He thought they might look forward to a not impossible future when the houses which were radically wrong, with all sorts of wrong fittings about them, would have been amended. Then what was the sanitary inspector to do? Work could be found for him in seeing that the houses were primarily properly constructed. He did not see why it should not be necessary before building a house to send in detailed particulars to the local sanitary inspector, and for the inspector to have his say as to whether these fittings, &c., were suitable or wrong. That was what he meant by primary work. That was the goal which they must look forward to reaching. There was not much of a retrospect in their profession, but the outlook was immeasurable. It was in the hands to a great extent, he thought, of that Association and its branches. That Association represented the strength and the wisdom of the profession. The future of the profession, the honour of the profession, were in their keeping

as an association, and he thought they were safe in their hands.

The CHAIRMAN (who is vice-president of the Association) in responding to the toast, referred to some papers which had been read at the meetings of the Association, and remarked that they were of very great value. The meetings of the Association tended to promote companionship, fellowship, and goodwill among the members, and enabled them to carry out the combined operations throughout Liverpool and district. He then proceeded to give an interesting sketch of the sanitary condition of Liverpool and other large towns and cities about half a century ago, and traced the progress of sanitary reform up to the present time. Speaking of Liverpool, and comparing the year 1846 with 1888, they found, he said, that in 1846, with a population of 240,000, there were 9,707 deaths, while in 1888, with a population of 600,000, there were 12,159 deaths. If last year's mortality-rate had been the same as in 1846, there would have been 25,000 deaths. They ought to point out the deleterious effects of filth, and the blessings and comforts of cleanliness, and they should also disseminate information regarding the absolute necessity of adequate ventilation in dwelling-houses. He hoped the retrospect he had taken of the former insanitary condition of Liverpool, and of the great and important sanitary works carried out to remedy the evils, would encourage them all to a faithful and efficient discharge of their duties, having the certain confidence that their work would save many valuable lives, and would lessen the misery and distress of hundreds of families.

Dr. CARTER described Liverpool as a city set on a hill as a conspicuous object for sanitarians to look to, and as an example of sanitation, to effect which no expense has been spared. Liverpool was one of the most densely-populated cities in the United Kingdom. As the population increased the health of the city has become progressively better. It was now one of the most healthy cities in the kingdom, whereas fifty years ago it was one of the most unhealthy.

Councillor HOULDING alluded to the excellent staff of sanitary inspectors who were employed in the sanitary department of the City Corporation. These were a well-educated, skilful class of men, well fitted to discharge their duties. There was, he said, although so much had been effected, still plenty of work for them to do with respect to the sanitation of the city.

SANITARY MATTERS IN AMERICA.

(From our own Correspondent.)

THERE has been a profound sensation in Hartford, Connecticut, on account of the revelations made during the repairs of the High Street school-house. It appears that an unused cistern of stagnant water had been under the main building for several years, being filled continually from roof drainage, but never drawn from except by evaporation. When it was disturbed the odour was very strongly impregnated with the worst sort of sewer gas, and the other sanitary appointments were of the most incomplete and unsatisfactory character. Several children who have been attending the school have been ill with diphtheria, and some have died, but the district management has promised to have the building put in complete repair as soon as practicable.

Diphtheria in a school building.

The Massachusetts State Board of Health has recently issued an analytical report which contains matter that should deeply interest a large class of would-be reformers who recommend the use of so-called "tonics" to take the place of alcoholic stimulants. Of 47 samples of such compounds known as "bitters," all but one contained an average of more than 21 per cent. of alcohol. One of them, described as a purely vegetable extract, "a stimulus to the body without intoxication," contained a little more than 40 per cent., and one sample showed 47 per cent. Certain "sulphur bitters," advertised to contain no alcohol, really contained more than 20 per cent. of that article and no sulphur. That is the kind of stuff recommended as soothing inducements to temperance, and recommended to be taken in doses of a wineglassful three or more times per day. It would be interesting to know how much of it is consumed by men and women who use it while labouring under the delusion that they do not touch intoxicants in any form. It would not be generous to hint at the possibility that the list includes a sprinkling of those who attended the recently adjourned Women's Christian Temperance Union conference in Chicago, but the report may be commended to them and others as possibly opening up a wider field for effort in the direction of reform than any they have yet marked out for themselves to labour in.

Composition of "bitters."

An epidemic of typhoid fever has been prevailing at Yale University at New Haven, Connecticut. Four students have died out of eight so-called "authentic" cases. Members of the faculty and the college officers protest that these cases are no indication that the college buildings are in an unsanitary condition, or that New Haven is not a healthful place. They point out the fact that the cases are equally divided between students who live in the college buildings and those who roomed elsewhere in the city. The plumbing and all the arrangements in the buildings are modern and the very best that could be devised. An entirely new and very costly system was put into all the buildings in 1883, under the personal supervision of Colonel George E. Waring, the sanitary expert. He was instructed to get the best, and the faculty believe he got it. The water used in all the buildings is that furnished by the city. It comes from Lake Saltonstal and Lake Whitney, far from the city and all other contaminations. It is analyzed by the health board every month, and pronounced to be perfectly pure. The sewerage system of the college connects with that of the city, which is supposed to be one of the best in the country. All the traps bristle with the devices that sanitary science knows of to catch the elusive germ. The health board has had every one of them carefully examined by experts since the panic broke out. The experts say that few buildings in the country have better sanitary arrangements, and they cannot find a leak anywhere. Whereupon the health board has given the buildings a clean bill of health. Nevertheless there is good reason to believe that if the sun and air were admitted freely to the buildings, there would be less sickness.

Typhoid fever at Yale.

There seems to be in the city of Brooklyn, New York, a little coterie of "peculiar people," who put their whole faith in Providence instead of man in case of sickness. One of them, Edwin Larsen, was arraigned in a criminal court recently for refusal to give medicine to his four-year-old child, who had been attacked by diphtheria. At first the man would not summon a physician, but when the little sufferer grew worse he called in a doctor to see what the matter was. The doctor left a prescription, but on his next call learned that no medicine had been given, and received this explanation from the father:—"I will give my child no medicine. If she has diphtheria it is because God wants her to have it, and I shall not interfere with His will. If He wishes her to die, let her die; if He wishes her to get well He will cure her without any help."

A father trusts in Providence.

Fortunately, no parent is permitted with impunity to endanger the life or injure the health of his children through any inhuman idiosyncrasy of faith. The Penal Code of the State of New York declares that: "A person who wilfully omits, without lawful excuse, to perform a duty by law imposed upon him to furnish food, clothing, shelter, or medical attendance to a minor is guilty of misdemeanour."

In case the child dies from neglect, the parent is guilty of manslaughter. Of course the question of insanity may arise. But if the offender is found to be sane, his

peculiar faith or religious belief will not shield him from the penalty of his crime.

Yellow fever germs.

Dr. Wolfred Nelson, of New York City, formerly a resident in Panama, who has made a special study of yellow fever, has announced that the investigations and experiments of Dr. Demingos Freire, of Rio Janeiro, have demonstrated that the human system could be protected against the disease by inoculation. Dr. Freire's investigations were carried on under the direct encouragement of Dom Pedro, and such confidence is now felt in the value of his process, that the Municipal Council of Rio Janeiro has appropriated 600 dollars monthly for the maintenance of depôts of yellow fever virus in that city. Dr. Freire's process consists in producing attenuated yellow fever microbes. Inoculation with these causes a mild form of yellow fever, which protects the subject in future against the disease, just as vaccination does against small-pox. Dr. Girerd, lately surgeon-in-chief of the Panama Canal Company, and Dr. Carlos Findlay, of Havana, have made experiments verifying Dr. Friere's results.

Dr. Nelson produced a copy of a report recently presented to the French Academy of Science by Dr. Freire. This gives the results attained by means of inoculation during the epidemic in Brazil in 1888 and 1889. It says:—

"The maximum of the epidemic was between the months of December and March, the first sporadic cases having appeared about the end of the month of May 1888, and the last in June 1889. During this period there were inoculated 3,570 people—to wit, 988 strangers and 2,582 Brazilians. The disease raged with great intensity in all of the places where inoculation was tried, and inoculations were made for the most part where the epidemic was at its worst. The rate per 100 of mortality among the vaccinated was ·078; at some places the immunity from the disease was absolute. The number of deaths from yellow fever among the non-vaccinated in the places concerned was 4,135, of which 2,800 were of strangers. In order to make the efficacy of the inoculations more marked, it suffices to remember the proportion established by M. Jemble, in Senegal—to wit, that among strangers 75 per 100 were attacked by yellow fever, and 66·06 per 100 of those attacked died. Applying these facts to the vaccinated strangers or provincials we obtain the following results:—The whole number of such persons inoculated was 2,197. Of this number, according to M. Jemble's proportion, 1,098 should have died. Only 25 did die. Since 1888, 10,524 persons have been inoculated, and among them the rate of mortality from yellow fever has been ·04 per 100."

Dr. Walter De Forest Day, who has occupied the position of Sanitary Superintendent of the Health Department of the New York City for a number of years, died last month. Dr. Day was well known to persons who had any business connected with the New York Health Department. He was a man genial by nature, and kind and considerate, and an executive officer, whose abilities were generally recognized. Although punctilious as far as the requirements of the Department was concerned, he made no enemies during his career. In 1873 Mr. Day was appointed superintendent of the Board of Health at the time of the organization of that body, a position which he long held with usefulness to the city and honour to himself.

The health officer of the State of Florida has declared Key West in that State to be infected with yellow fever.

A medical officer of the United States Marine Hospital Service announces as the result of an examination of the scrapings of nail-dirt from the fingers of hospital nurses, that in only 2 instances in 27 were the hands found to be sterile.

The seventeenth annual meeting of the American Public Health Association has been held at Brooklyn, New York, and lasted four days. The president, Dr. Hosmer A. Johnson, of Chicago, in his address referred to the promotion of public health as distinctive from efforts to insure personal health, and in general terms advocated more liberal support to public health measures. "The Overshadowing of Our Homes" was a self-explaining title adopted by Dr. W. Thornton Parker, suggesting a happy intermingling of shade and sun. Dr. James F. Hibberd, of Richmond, Indiana, read an article on "Clothing in its Relation to Hygiene," in which he suggested that instead of retaining warmth in the body by adding clothing it would be wiser to increase the amount of heat generated by using fatty and saccharine foods combined with exercise. "Infant Mortality" formed the subject of papers by Dr. Jerome Walker, of Brooklyn, and Dr. R. O. Beard, of Minneapolis, each asking for more air and water for babies. It was also stated that infantile diarrhœa is much less common in the South than in the North. Thus while the death-rate from this cause in New Orleans was only seven in ten thousand, in Boston it is twenty-five, and in Chicago thirty-five in ten thousand. Dr. John S. Billings, of the United States Army, talked of the forthcoming census and sanitary science, saying that for all cities of ten thousand inhabitants and upward it is proposed to collect as complete information as possible with regard to altitude, climate, water supply, density of population, sewerage, proportion of sewered and non-sewered acres, and other points bearing on the healthfulness of the places. Dr. Wm. M. Smith, health officer of the port of New York, read a paper on "Improvements at the New York Quarantine Station" illustrated with stereoptic views. "The Prevention of Consumption" was treated by several gentlemen, and it was stated that those who know that they are victims of consumption, or who have any reason to suspect that they may have the disease, should avoid promiscuous and indiscriminate expectoration, that is to say, they should expectorate not on the floor but into a receptacle that may be disinfected; in this way the seeds of the disease may be destroyed instead of being carried, when the expectoration has dried, by the atmosphere, to some individual who will present a suitable soil for their development. "Sanitary Entombment" was an article by Rev. C. R. Treat, of New York, his plan contemplating the erection of handsome, imposing, solemn and suitable buildings, wherein little recesses or spaces are provided for the reception of bodies. Then a current of air is made to pass over the body, so that it is dessicated, thus artificially bringing about the condition that is naturally produced by the peculiar atmosphere of certain portions of the world. A building two hundred by three hundred feet can be made to provide accommodations for thirty thousand bodies. At the election of officers Dr. Henry Brooks Baker, the indefatigable secretary of the Michigan State Board of Health, was made president, Dr. Frederick Montizambert, of Quebec, and Dr. J. H. Raymond, of Brooklyn, vice-presidents, Dr. Irving A. Watson, of Concord, N.H., secretary, and Dr. J. Berrien Lindsley, of Nashville, Tennessee, treasurer. It was decided to hold the next annual meeting at Charleston, S.C.

The annual report of the surgeon-general of the army has just been made public. Mentioning the hospital corps, Dr. Moore remarks: "The personnel of its lowest grade is not yet what it should be. This is to be attributed chiefly to the meagre pay allowed to its members; on this account some of its most efficient men decline to re-enlist," which, says the surgeon-general, "is a subject for grave consideration. The remedy for this evil is to be found in the retirement of those officers who are permanently disabled in order that their places may be filled by effective men. This has been constantly urged during the last twelve years, but the demands upon the retired list from other branches of the service seem to have been so great that so far nothing has been accomplished. I therefore urgently recommend that this much-needed relief be asked for from Congress by a Bill authorizing the retirement of those medical officers who may be found unfitted for the performance of all their duties." There were 31,420 admissions to sick report in the year,

of which 25,415 were for diseases, and 6,005 for injury, equivalent to 1,270·73 entries for every 1,000 men of the strength present, and giving a daily or constant sick-rate of a little over 4 per cent. of the command. The deaths numbered 218, equivalent to an annual death-rate of 8·15 per 1,000 of strength, and the discharges for disability 742, equal to a rate of 27·75. Of the deaths the rate was 7·55 for whites, and 13·66 for coloured men.

It is stated by a medical authority that forty-two cases of leprosy exist in New Orleans, and that cases are scattered along the Union Pacific railroad.

The Michigan State Board of Health has decided that cases of so-called "typho-malarial fever" should be reported to the local health officer and the same precautions taken as in cases of typhoid fever.

The Secretary of the Massachusetts State Board of Health suggests a novel substitute for the death penalty of hanging. He says: "An atmosphere of 25 to 30 per cent. of carbonic oxide, as in the case of water gas, or better still, one of 50 per cent. or more, as may be made from charcoal, would undoubtedly destroy human life in less than two minutes without pain." He has himself used a mixture of about 7 per cent. with air with perfect success in destroying small animals in from one to one and a half minutes without the appearance of pain.

JOTTINGS FROM FRANCE.

(From our own Correspondent.)

A NEW model dwelling-house (*maison économique*) similar to that constructed last year in the Rue Jeanne d'Arc has just been opened in the Rue de Grenelle by the Philanthropic Society; the price of the apartments ranges from 8s. 6d. to 11s. 6d. per week. Each tenant has a cellar, a water-closet, and the gas laid on. Of the 46 separate lodgings contained in the building, 36 are already let, although the tenant's fittings are scarcely completed.

The microbe of typhoid.

M. Monod states that an epidemic of typhoid fever has appeared at Civray, and that the pathogenic microbe has been discovered in the water of a well which supplies the population. Isolation, and the disinfecting of bedding and clothes seem to have checked the development of the epidemic.

Tetanoid properties of earth.

M. Paul Bossano, of Marseilles, has made experiments in order to ascertain the tetanoid properties of earth. He took 48 specimens of soil from as many different countries. Positive results were obtained in 27 cases. Ninety-six animals were inoculated, each with a different kind of soil (obtained in some cases from the same country), 39 of these died in a tetanic state; 16 succumbed in consequence of the inoculation, 9 without presenting well defined pathological phenomena, and 7 with but slightly marked tetanic symptoms.

These experiments are interesting from the fact that tetanus being more frequent in some countries than in others has been explained by the influence of climate. In M. Bossano's experiments the soil of hot countries gave the same results as those of cold or temperate countries. The prevalence of tetanus in certain countries appears, therefore, to be the result of defective hygienic conditions and want of precautions in the treatment of wounds rather than of any meteorological influence or predisposition of the race.

In consequence of the death of a cabman from suffocation by the carbonic oxide emitted by the foot-warmer in his cab, the Prefect of Police has issued strict orders that no coal or coal-blocks should be burned in foot-warmers placed in cabs unless the foot-warmers are so constructed as to allow of the escape of the gases of combustion into the outer air.

SANITARY MATTERS IN GLASGOW.

(From our own Correspondent.)

WITH reference to my notice of the classes for medical students, in the university conducted by Dr. Allan of Belvedere Hospital, the latter has found it necessary in the meantime to resign the position. The university authorities relieve themselves from all blame for this having occurred. Lately Dr. Allan was appointed lecturer on fevers in connection with St. Mungo's College, an institution lately formed in connection with the Royal Infirmary. Although Dr. Allan has not explained the reason, it is generally understood that there has been some conflicting interests in his relations between the University and the St. Mungo's College.

Clinical instruction in infectious diseases.

The High Court of Justiciary at Edinburgh dismissed the appeal against the decision by Sheriff Berry in the recent tuberculosis inquiry. This settles, for all time coming, the question of tuberculosis, but the whole question of the sale of unsound meat from the want of proper legal powers is beset with difficulties. As already noted, a deputation of the Town Council, with the sanitary inspector, has lately visited Manchester, Liverpool, Birmingham, and London, to obtain information as to the method of inspection, condemnation, and powers of these local authorities, with the view of incorporating what is considered necessary in the new Bill of sanitary powers about to be presented to Parliament. The local authority under the Public Health Act have constructed at each of the five slaughter-houses of the City, large tanks of oak for immersing seized carcases in a solution of picric acid, proto sulphate of iron, and water. This acid treatment renders the condemned flesh to be of such an appearance that no person would use it as human food. The question of the disposal of fourteen carcases of American cattle which had died before being landed was discussed at great length in the Sheriff's Court a few days ago. The owner of the carcases maintained that he was entitled to obtain possession for "merchantable" purposes other than those for human food, without such acid treatment. These purposes are said to have been those of boiling down for soap making. He also pleaded that at Yorkhill slaughter-house, where they were seized, they were not exposed for sale for human food. The Sheriff, however, has decided that the intention of the Public Health Act was to guard the public against the possibility of unwholesome or unsound meat; that there was a danger and risk that this meat might fall into the hands of unscrupulous dealers; that the carcases were exposed for sale for human food, or that the sanitary inspector had good reason for believing that such was the intention; and he granted an order for their disposal by the sanitary inspector in terms of the petition. While this is so far satisfactory, it is felt there are great difficulties certain to arise in connection with the subject until proper Parliamentary powers are obtained.

The inspection of dead meat.

Application is being made by the following parties to the Board of Trade for provisional orders under the Electric Lighting Acts. The Glasgow Municipal Corporation, Scottish House to House Electricity Company, Limited, the British Electric Engineering Company, Limited, and Muir, Mavor, & Coulson, Limited, 139, St. Vincent Street. The Corporation owns the gas works in Glasgow, and evidently have been foreseeing this competition for the lighting of the city, for the rate per 1,000 feet has, during the past few years, been gradually decreasing until the present exceptionally low rate of half-a-crown. The Electric light has not made much advance here. It is employed in the City Hall, General Post Office, and a number of the railway stations. The Lord Advocate having advised the Board of Trade that the Lord Provost, Magistrates, and Council (Police), are in his opinion the local authority for electric lighting purposes under the "Electric Lighting Acts 1882 and 1888," it has been resolved to oppose the applications of these companies.

Lighting by electricity.

The North British and Caledonian Railway Companies have commenced the execution of important underground city lines, which materially affect, and will cause alterations in, the present system of sewers. The companies are, however, not only bound to make good any damage that

Alterations in the drainage system.

may be done to the existing sewers, but also to provide such new sewers as may be considered necessary, and, at certain points, outfalls of adequate capacity. The master of works, Mr. Carrick, has prepared plans, &c., for a main intercepting sewer along the east side of the North British Railway's Bridgeton Cross Extension, joining a similar one in connection with Central Railway, and terminating at the river bank at Dalmarnock. Similar new sewers are to be formed in Western District. Mr. Carrick considers that the alterations of these sewers consequent on the railway works presents a favourable opportunity of testing on an ample scale at a comparatively small outlay "the system advocated by those who favour the method of dealing with sewage by means of chemical agents. The expenditure involved in any complete system of river purification, whatever method may ultimately be adopted, will be enormous, and the reporter feels strongly constrained to urge upon the municipal authorities, whatever their future policy may be, the advisability of proceeding in a tentative manner; and the present opportunity may be regarded as one eminently advantageous for experiment at a minimum of cost." The corporation have an extensive area of waste lands at the disused waterworks at the east end of the city, and it is proposed to experiment there with the precipitation treatment. The assistant master of works, Mr. Whyte, along with one of the councillors, has lately visited London and Paris with regard to "systems and placing of electric, telephone, and telegraph wires in these cities, and as to paving sewers and other matters connected with the statute labour department." It may be of interest to give the gist of a few of Mr. Whyte's impressions of the sewer systems of these cities. He learned that the Parisians are proposing to do away with the present system of discharge into the Seine, and to carry the sewage to the forest of St. Germain. Attention is often drawn to the purity of the water in the Seine; but when it is considered that from the point at which the sewage collection commences to the point of discharge, a length of sixteen miles, no sewage is allowed to enter the river, and that the Seine at Paris is not a tidal river, and the discharged matter is consequently conveyed away from it to the sea, this is not to be wondered at, especially when it is taken into account that of the 600,000 closets in Paris only 200,000 are water-closets. The gigantic system of sewage adopted in Paris cannot be adopted in Glasgow to the same extent, as, on account of our streets being so little above the level of mean tide, they would, if so constructed, be to a large extent flooded by every tide. With regard to Brighton, he thinks the only thing in connection with its sewage which could be adopted for Glasgow is the ventilating shaft with the furnace for consuming the foul gas. The treatment of the sewage at Kingston-on-Thames cost 1½d. per £ for building and works, and 3d. per £ for treatment. The total cost of the buildings, offices, walls, roads, tanks, and machinery was £22,500. Mr. Whyte expresses himself as favourably impressed with the system evidenced the "raw sewage, black and disagreeable as it approached the house in which the screen is placed, and the effluent as it left the works to all appearance clear, odourless, and, in our opinion, wholly unobjectionable water."

NOTES FROM THE NORTH.

(*From our own Correspondent.*)

THE ordinary monthly meeting of the Walker Local Board was held on January 7, under the presidency of Colonel Crawford. The circular letter of the Local Government Board, in reference to the dwellings of the labouring-classes (see page 306), came under consideration, and the clerk gave an explanation of the powers of the Board in this matter.

Dwellings of the labouring classes.

The Rev. J. S. Beckwith said he was glad that the Local Government Board had shown them that they had power to put those wretched places where human beings were obliged to reside in a fit and proper state. He thought a great number of property owners had taken refuge behind the fact that they could not be reached, because their property was built before the bye-laws of the Board came into operation, but now they would learn that the board had an instrument by which they could reach these people, and make them put their property into a sanitary condition. The rev. gentleman moved that a committee be appointed to survey houses that were let for lodgings, with a view to prevent overcrowding, which was agreed to. It should be noted that the position of Walker is somewhat analogous to that of many parts of London, the houses being mostly built on land belonging to a neighbouring corporation, who usually grant 75 years' leases, and here, as elsewhere, the builders strive to get as much as possible out of the property in the limited time at their disposal. Hence the tenants and the public health suffer. Unfortunately the evils complained of here are too common in other places.

A lively discussion took place in the Gateshead Council Chamber on January 8, relative to a proposal to adopt the Notification of Infectious Disease Act 1890 in that borough, which was proposed by Mr. L. H. Armour, and seconded by Alderman Penman. Dr. Todd said that by the adoption of the Act the incomes of medical men would be very much diminished; but medical men did not look at these matters from that point of view. The present decrease in the death-rate in all parts of the country was, to a large extent, almost entirely due to the unselfish efforts of medical men. At present there were difficulties in the way of notifying cases. Many people, if a doctor reported infectious disease, would throw him off and get another doctor. If there was illness in a place of business, people did not care to have it made known, lest it might injure their business. Dr. Abraham also strongly supported the motion, which, he said, was for the benefit not of a portion, but of the whole community. If gentlemen knew the amount of gratuitous work done by medical men, they would not say such nasty things as had been said that afternoon. The matter was ultimately referred to the Sanitary Committee.

Notification of Infectious Disease Act.

Dr. Munro, the Medical Officer of Health for South Shields, reports that the number of deaths in that borough for the four weeks ending December 28, 1889, was equivalent to an annual death-rate of 24·0 per 1,000, as compared with 17·7 in the corresponding month of last year. The excess in the death-rate was principally due to an exceptional number of deaths from pulmonary diseases, and among aged people.

Increase of pulmonary diseases.

NOTES FROM THE SOUTH.

THE sanitary authorities at Portsmouth have been very vigilant of late with the view of preventing the spread of infectious diseases. Recently a petty officer, serving on board H.M.S. *Excellent*, was summoned for transmitting infected bedding, contrary to the provisions of the Public Health Act. It appeared that a case of scarlet fever having been reported at defendant's house, a notice was duly served, warning him against buying, selling, transmitting, or exposing any bedding or infected clothing. Subsequently a second notice was served, there being another "case" in the house. It was also discovered that defendant had removed to another part of the town, without his goods having been disinfected by the authority. The defence was thoughtlessness on the part of the defendant's wife, who forgot to show her husband the notice. A fine of £1 5s. 10d., including costs, was imposed.

A new infectious diseases hospital is about to be erected at Dartmouth, but some difficulty has been experienced in obtaining a suitable site. Several offers are, however, under the consideration of the Port Sanitary Authority, and no time will be lost in establishing the institution.

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The Falmouth drainage question has assumed a rather

acute phase. Some time since, in order to avoid threatened litigation, the local Sewerage Board called in Mr. Hawksley, the well-known sanitary engineer, who recommended various alterations. A portion of the works recommended by Mr. Hawksley have already been carried out, but the Local Government Board, as the result of an inquiry conducted by Mr. S. J. Smith, have refused their sanction to an application by the Board to borrow £1,120 to defray the expense of certain additions, &c., to the sewage tank at Market Strand, and of providing surface drainage. It is urged by those opposed to any large drainage scheme, such as the Local Government Board appear to consider necessary, that the district is one of the healthiest in the kingdom, and that the completion of the alterations suggested by Mr. Hawksley is all that is necessary.

THE FORSYTH TECHNICAL COLLEGE.

ALL interested in the more complete education of our girls will rejoice in the success with which the Forsyth Technical College has so far met. For some time past it has been felt that there was a wide gap in our educational system caused by the want of theoretical and pratical training for girls in the domestic arts and in hygienic, sanitary, and other important matters connected with the well-being of a household. The idea of filling up this gap originated with Miss Forsyth, who first experimented with her idea by holding a few classes for cookery, dressmaking, millinery, and book-keeping, at 14, Victoria Square. These proved so successful that it became necessary to cast about for a more suitable building in order to be able to increase both the pupils and classes. Miss Forsyth was entirely alone in her venture at first, but now the college has been transformed into a limited company, and is established at 19, Queensberry Place, South Kensington, with Miss Falkner as principal. The classes now include, in addition to those already mentioned, hygiene and sick nursing, finance and the investment of money, household management, upholstery, clear starching, fine laundry-work, and hair-dressing; and in time it is hoped to include gardening in this comprehensive curriculum. In the personal hygiene class, the laws of health, dress in its relation to health, food, exercise, over-exertion, sleep, are all treated of. Next in interest come the classes on household management, in which valuable hints are given as to sanitary household arrangements, such as the best filters, the best coals for various uses, how to make tea, coffee, cocoa, porridge, and toast, in the proper manner, how to select and preserve eggs, and many other points upon which such lamentable ignorance is often displayed. The soil, situation, aspect, ventilation, drainage, and water supply of a house are gone into. Dress and bed coverings suitable for various seasons with regard to warmth and health are also attended to. The cookery classes are very popular, and the course is in all respects a thoroughly practical and sensible one. The making of necessary dishes and drinks for the sick-room, such as barley water, lemonade, chicken broth, veal tea, port wine jelly, white wine whey, chicken panada, beef tea (three ways), arrowroot, and so forth, are all theoretically and practically taught, a teaching upon which too much stress cannot be laid, since in so many cases these requisites are often presented to the patient in so unpalatable a form. Those desirous of penetrating the mysteries of Indian cookery—curries, mulligatawny, dhâls, spatchcock, kuftas, &c.—can be initiated into them by Mrs. Johnson.

The teaching of upholstery, finance, and the investment of money may be cavilled at, but on looking into these subjects it will be seen how very necessary it is for ladies to have some knowledge of such things. For instance, in the upholstery classes, they are taught how to make loose covers and tight covers for furniture, how to stuff and then cover chairs, how to fit up a child's bed with mattress, pillow, &c., how to mount worsted-work and accomplish cording, how to make bolsters and other kinds of cushions, an acquaintance with all such things being a vast saving in the many households where economy has to be studied. Again, as to finance and the investment of money, it is very important for ladies to understand something of such matters instead of having to rely solely upon other people for information as to how to invest their money, &c. The clear starching and fine laundry classes teach girls the proper way to get up collars and cuffs, fancy handkerchiefs stockings, muslins and nets, children's undergarments and silk clothing, lace and embroidery (crewel work, &c.), flannels and shirts. Each pupil brings her own articles to practice upon.

Apart from the dressmaking class there is also one for needlework, where students are taught how to make all kinds of underclothing, infants' clothing, and how to accomplish really plain darning and patching, as well as fancy stitches for ornamenting underclothing. The system of dressmaking taught is that of tailors, and each pupil brings her own materials. Children's tailoring and undergarments are also included in this course. In the millinery classes also each pupil provides her own materials, and she is taught how to make and trim hats, caps, and bonnets, bows for dresses and for the hair, and lace fichus. Millinery comes quite naturally and easily to some, but to those who have not a gift for it, these classes will be found of very great assistance.

We have mentioned that it is intended to start a class for gardening, and such a class will be very useful to those who possess small gardens or conservatories, or even only boxes on their window ledges. To know how to manage ferns, the time for sowing seeds, taking cuttings, &c., is invaluable to those who are aware what an addition to every home is constituted by flowers and ferns. Ladies can join one or more classes as they please, and if they wish to reside at Queensberry Place they can do so provided there is a vacancy. Especial stress is laid on the practice of order, neatness, punctuality, and cleanliness throughout the classes.

It is now acknowledged that there is a science of home, made up of many different branches, and it is in recognizing the dignity of these household arts, worthy of the attention of high and low alike, that we have ventured to dwell upon the importance of the establishment of the Forsyth Technical College. With the enlightenment of girls upon domestic matters should come the improvement of our servants, who are too often foolishly treated through the ignorance of their mistresses. The influence a good mistress of a household can exert is not merely confined to her own home; it takes root and spreads and works beneficial results in other quarters. In these days of competition and struggles for existence, the household economy of our homes comes more than ever to the fore, and therefore it is hoped that success in all directions will continue to crown the labours of the Forsyth Technical College.

THE NATIONAL REGISTRATION OF PLUMBERS.

THE first local examination of candidates for admission to the register of qualified plumbers has been held at Liverpool, under the auspices of the district council for West Lancashire, Cheshire, and North Wales. The Worshipful Company of Plumbers were represented by Mr. Smeaton (master plumber), and Mr. Nurse (operative plumber), of London. The local examiners were Mr. Edmund Kirby, F.R.I.B.A. (chairman), Dr. W. Carter, Dr. W. G. Steeves, Mr. Lloyd (master plumber), and Mr. Keighley (operative plumber). Dr. J. STOPFORD TAYLOR visited the examination as chairman of the registration committee. After examining the workmanship and the theoretical knowledge displayed by the several candidates, the board eventually approved of two-thirds of the applicants, and the hon. secretary (Mr. Watkin Hall, C.E.) was directed to forward their papers to London, with the remarks of the examiners in each case.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

"Something attempted, something done."

PORT OF LONDON.—It is gratifying to learn from Dr. W. Collingridge's last half yearly report that there was very little infectious disease of any kind during the first six months of the year 1889. Advantage was taken of this favourable condition to concentrate attention on the general sanitary work of the district, such as, in the presence of epidemic work, it would be well-nigh impossible to give. Altogether 9,713 vessels were examined, cleansing orders being necessary in 288 cases. In this connection it may be noted that the medical officer expresses his appreciation of the support given to the authority by the masters and owners of vessels, both in the cases of cleansing orders and where orders for structural alterations are necessary. Of these, 389 have been carried out on 354 vessels; 130 related to ventilation, 28 to the storage of water, and 231 to the lighting and heating of forecastles. Most of them, while effecting important hygienic improvements, were carried out at a comparatively small expense. The report draws attention to the superiority of slate or iron bins for the storage of water, over the cheaper but insanitary wooden cask. Dr. Collingridge has devoted much attention to this point, and it is satisfactory to be able to report that proper storage for water on board small craft is becoming far more usual. Application was made to the Local Government Board to add chicken-pox to the list of disorders regarding which the Port Sanitary Committee have power to make regulations. Inasmuch as Lascars and other natives who are especially subject to infantile diseases of a severe type, form a considerable percentage of the crews of the large ocean-going passenger steamers, this notification becomes of great moment when the importance and character of our ocean passenger-traffic is taken into consideration. It has happened that chicken-pox has spread on board these vessels and given rise to much trouble. The particulars of unsound meat, &c., seized are satisfactory, the condemned goods forming only a very small proportion of their respective cargoes. With regard to Canvey Island, there has been but one case of infectious disease, while the water supply has been greatly improved. The statistics of the canal boats show that out of 328 boats, having on board 786 persons, only one prosecution took place for infringement of the Canal Boats Acts, while no infectious disease existed on board the boats. The registration under these Acts of the Thames lighters, not under the Merchant Shipping Act, is proceeding steadily.

Storage of water.

Notification of chicken-pox.

Unsound meat.

Canvey island.

Canal boats.

HEBBURN (Population, 16,000).—A slight general increase in the mortality of this district occurred during 1888. This was chiefly owing to acute and severe changes in the weather, chest diseases being much influenced thereby, whilst whooping-cough and its complications caused a large number of deaths. Mr. W. J. Sweet considers this the most unfavourable item of his report, so much of this mortality being the result of carelessness on the part of parents and guardians. Thirty-seven cases of scarlet fever were reported, five proving fatal. No deaths resulted from measles though the disease was prevalent. The hospital was kept in good condition to receive patients, but only one case of typhoid fever was admitted, and that on December 29. The general death-rate was 16·6 per 1,000, as against 15·5 in the previous year.

Carelessness of parents.

Hospital.

TOTTENHAM (Population, 87,942).—In reviewing the work of 1888 Dr. W. T. Watson reports that considerable progress was made in carrying out useful sanitary work, and that great improvements were effected in certain localities formerly in need of constant supervision. Praiseworthy diligence was manifested in the inspection of dwelling-houses throughout the district. Efforts were directed to obtain the earliest and fullest information of the existence of cases of preventible disease, to the discovery and removal of structural defects, the isolation of patients, their removal to hospital when necessary, disinfection, &c., and to the improvement of drainage. An infectious diseases hospital, however, continues to be a desideratum. The zymotic deaths were more numerous than in 1887, typhoid fever and whooping-cough both showing an increase on that year. Of small-pox, scarlet fever and diphtheria no special outbreak is recorded, and it is satisfactory to note the gradual decline of the last named disease during the last seven years. The total annual death-rate was 15·1 per 1,000, the most satisfactory rate, with one exception, of ten years. Perhaps a better criterion of the amount of sanitary improvement effected in recent years is the decline in the deaths of children, the numbers having fallen from 784 in 1886 to 592 in the year under notice.

Hospital needed.

Decline of diphtheria mortality.

Infant mortality.

KENSINGTON (Population, 177,000).—The sanitary administration of the metropolis generally and the legislation controlling it, are very ably discussed in Dr. T. Orme Dudfield's annual report on the parish of St. Mary Abbotts, Kensington. This publication is a really valuable commentary on all the most important aspects of sanitation, particular attention being given to the work of the Metropolitan Asylums Board, a subject in which Dr. Dudfield is especially interested. An important improvement gained during the year 1888 was the admission of diphtheria patients for treatment in the hospitals. This action has been since specially legalized by the Poor Law Act, 1889. The brief review of the statistics since 1856 discloses a remarkable decline in the death-rate, and more especially in that from preventible diseases, an improvement which Dr. Dudfield considers to have been largely due to the legislation of 1866 (The Sanitary Act) and 1867 (The Metropolitan Poor Act), the metropolis having been provided under the last-named Act with a magnificent system of hospitals for infectious diseases, organized by the Metropolitan Asylums Board. "It is not probable," he says, "that the good results of the past thirty-three years of sanitary administration will be far surpassed in time to come; but something may be done by legislation to facilitate the proceedings of those, authorities and officers, alike engaged in the great work. What is most wanted is machinery whereby a nearer approach to unity in carrying out the provisions of law may be attained." For some years past the general rate and the zymotic rate have both been below the decennial average in Kensington. But in 1888 it was otherwise, for although the general death-rate, 15·9 per 1,000, was below, the zymotic death-rate, 2·3, was rather above the average. This was due to an excessive mortality from diphtheria and measles. The number of deaths from enteric fever corresponded with the decennial average, whilst the number of deaths from scarlet fever was scarcely more than half the corrected average.

Isolation of diphtheria.

Sanitary retrospect.

LAMBETH (Population, 281,935).—Since the year 1871, 70,000 persons have been added to the population of Lambeth. The annual rateable value has increased by 63 per cent., or a sum estimated at £600,000. 20,000 houses are now occupied by the working-classes, and more than an equal number by parishioners in more comfortable circumstances. Gauging its size by the number of houses contained within the limits of its boundary, it is the largest parish of the metropolitan group, though second to Islington in point of population. Dr. Verdon, in his annual report, comments upon this increase of population, and complains that, with this accession to the work of the department, no change has been made in

Insufficiency of inspectors.

the composition of the staff of sanitary inspectors. In 1871 their number was four, and in 1888 it remained the same; while in Islington, where the department has been reorganized, the number of inspectors has been increased to nine. As the health officer points out, it is the structural work which must of necessity be neglected when a department is undermanned, whereas it is from work of that kind that the most satisfactory and lasting results are to be looked for. The education of public opinion upon questions relating to health has also increased the strain upon the time and attention of the officers, the constant demands for aid showing the people to be far less tolerant of nuisances than formerly, and more alive to the advantages of sanitary dwellings. Indeed it is not so much to improve the district as to maintain the public health that Dr. Verdon pleads, and he puts his case so ably that it will, indeed, be a matter of surprise if the vestry do not concede the whole of his demands. The returns of the year show that more work was got through than in 1887, but this has been by means of temporary assistance, which latterly had been a constant necessity. The year was also favourable in point of epidemic sickness, the mortality from zymotic diseases being considerably less than in 1887, and below the metropolitan average. Some admirable disease-maps

Disease-maps.

are included in the report, indicating the localities chiefly affected by certain diseases. The absence of small-pox leads Dr. Verdon to sound a warning as to a possible appearance of the disease in epidemic form after such a period

Small-pox and vaccination.

of immunity. Small-pox and vaccination form the subject of an extremely interesting, if not altogether novel, article. The death-rate for the year was 18·1 per 1,000.

St. Luke, Middlesex (Population, 52,506).—Dr. G. E. Yarrow's report for 1888 is mainly statistical, and is a record of a somewhat uneventful year. The annual fluctuation in the death-rate is unfavourable, showing an increase of 0·25 per 1,000 upon that of the previous year, this being presumably due to a greater fatality from zymotic diseases, measles, whooping-cough, scarlet fever, and diphtheria being the contributing factors. Measles became extensively prevalent in St. Luke, in

Measles.

common with the rest of the metropolis, and in one locality the infant schools were closed, at Dr. Yarrow's suggestion. The table of sanitary operations carried out during the year is comprehensive, and affords evidence of zeal and energy on the part of the officers. In only seven instances was it necessary to resort to legal proceedings to obtain the removal of nuisances. It may also be mentioned that although the Vaccination Act has been in force in

Vaccination.

St. Luke's for twenty years, during which period over 30,000 successful vaccinations have been recorded, not once has it been found necessary to put the law in motion.

Poplar (Population, 186,200).—There is evidence of a gradual improvement in the condition of this district, and the reports of the health officers, Messrs. F. M. Corner and R. M. Talbot, as to the state of the public health in 1888, are in the main satisfactory. The combined death-rate was 17·9 per 1,000, and the zymotic-rate 2·9, a most favourable return when compared with the other eastern districts of London. A

Measles epidemic.

severe epidemic of measles prevailed concurrently with other parts of the metropolis,

Scarlet fever.

and scarlet fever was seldom absent from the district. Two cases of small-pox occurred

Small-pox.

in the north division, but by prompt removal to hospital, re-vaccination of other occupants of the infected houses, and thorough disinfection, no spread of the disease took place. Both persons worked for a city house as clothing makers, but on information being given to the firm, the supply of work to these families was discontinued. Mr. Corner describes

Unwholesome dwellings.

the condition of persons living in some of the lowest class of property, as of the worst possible description, and needing constant surveillance. Some good was effected by the

Overcrowding.

closing of certain dwellings described, but there can be no doubt that overcrowding does

Fever and dairy.

exist, and with it sickness and depravity. An outbreak of typhoid fever was obviously connected with an ill-kept dairy, six of the dairyman's family having suffered from illness which culminated in typhoid fever in the dairyman himself, and thence spread, presumably by means of the milk supply, to 89 persons. Of the 29 houses in which these cases occurred (all in or near High Street, Bromley), 21 had milk from this dairy. In many instances the examina-

Diphtheria.

tion of the premises in which diphtheria and typhoid occurred, showed defects in the drains, whereby a continuous supply of sewer

Smoke-test recommended.

gas was laid on to the houses. The easy application of the smoke-test and its value in the detection of defects in the drains has been repeatedly referred to by Mr. Corner, who expresses surprise that so cheap an apparatus should not be in the hands of owners and agents of houses. Scotch plumbers advertize to use this test as part of their business, and the health officer thinks it would be well if Poplar householders had other facilities than the sanitary authority for obtaining its use.

Wandsworth (Population, 139,078).—Since the last annual report, the parish of Battersea has been separated from this district, a measure which has greatly affected the statistics, and rendered a comparison with former years somewhat more difficult. On the whole the returns for 1888 are satisfactory, the death-rate, 13·7 per 1,000, though a fraction higher than in 1887, being much below the average, and 5·1 below the rate of the metropolis. The usual plan of framing the report has been adopted. A general summary of the statistics affecting the whole district is followed by the different local reports which deal more in detail with the different matters affecting the sub-districts. An increase in the zymotic death-rate was chiefly due to the prevalence of

Wandsworth division.

epidemics of measles, scarlatina, whooping-cough, and diphtheria throughout the district. The Wandsworth sub-district showed the highest death-rate, and Dr. Nicholas states that the amount of sickness was much larger than usual, not only from zymotic, but from all classes of disease, and more especially those of the respiratory organs. In

Small-pox and rag-picking.

this district also the only known cases of small-pox occurred, though no death was registered. The circumstances of the case point to the picking of infected rags as a source of infection to the first patient, the disease being thence communicated to two others. An important

Streatham and Tooting.

item in Mr. Sutton's report on Streatham and Tooting is the large mortality from diphtheria, there being no less than 30 deaths from this cause in that division, though the total number of cases was not great, nor the epidemic extensive. The disease was undoubtedly spread by direct

Putney.

contagion. Mr. Orr's report on the Putney district shows that the health of the parish was most satisfactory, there being a remarkable free-

Clapham.

dom from zymotic disease of a fatal type. Clapham did not escape so easily, its death-rate being next highest to Wandsworth; yet Dr. Oliver Field has been able to report a considerable improvement on 1887, both in the general and zymotic rates. The details of the sanitary work in each of the divisions show a careful attention on the part of health officers and inspectors to all matters of routine, and the maintenance thereby of an excellent sanitary condition throughout the district.

Whitechapel (Population, 74,500).—Mr. Joseph Loane records a further improvement in his district during 1888, the death-rate, 21·1 per 1,000, being an advance upon that

of 1887, hitherto the lowest on record. The infant mortality and deaths from zymotic diseases both bear favourable comparison with the returns of the preceding year, enteric fever and diphtheria alone showing an increase. Several questions of both social and sanitary interest are touched upon in the report, model dwellings, workshops, and their jurisdiction. &c. It is also satisfactory to find that Mr. Loane's belief "that the great influx of foreigners into the district had ceased," was confirmed by the investigations of the Royal Commission on "Sweaters and Sweaters' Dens," and of the Jewish Board of Guardians. He deprecates the idea of a preponderance of crime in Whitechapel, for though the district had the unenviable distinction in 1888 of an increase in the number of deaths from violence, and it was usual to credit it with outrages which in reality were far removed, the statistics of the past 26 years show that there were during that period a total of 19 deaths from murder. Of these 8 were infanticide, and 4 were reported from the London Hospital, there being no information given to connect the cases with Whitechapel. Mr. Loane testifies to the excellent character of the sanitary work of the year.

Influx of foreigners.

SURVEYORS' AND SANITARY INSPECTORS' REPORTS.

BOW AND BROMLEY (Population, 122,119).—In a district so large as that which Mr. W. T. Harrison has under his charge, it can hardly be expected that much should be effected beyond the giving due attention to complaints of nuisances received, and procuring their abatement. This constitutes the major portion of the work detailed in the annual summary for 1888, and a number of useful improvements were thereby effected. The removal of infectious cases to hospital, and the necessary disinfection of houses and clothing, &c., bulk largely in the returns. Bake-houses, slaughter-houses, and other premises open to the supervision of the sanitary authority, were duly inspected. The number of samples of food, &c., obtained for analysis was 145.

ALL SAINTS', POPLAR (Population, 59,844).—Mr. W. A. Shadrake's statement of the work carried out during the year ended March 25, 1889, refers mainly to inspections arising from complaints received at the office; in the examination of premises in which infectious disease was reported, the removal of patients to the different hospitals, the disinfection of tainted materials, rooms, &c. Out of 1,625 houses inspected, sanitary improvements were found to be necessary in 1,161 instances. Four cases of overcrowding were abated, 29 houses were closed as unfit for habitation, and numerous defects were remedied. Disinfectants were freely supplied gratuitously to all infected premises, and to all persons applying for the same; the rooms were fumigated with sulphur, and otherwise dealt with as the nature of the cases required, the work of removing and returning infected goods being effected, as far as practicable, at night. The number of samples of food, &c., obtained for analysis during the year was 146, and 9 convictions were obtained at the police court in respect of adulteration.

Houses closed.

Food adulteration.

BILSTON (Population, 22,730).—This district was regularly and systematically visited during 1888, and a fairly good sanitary condition maintained. The details of Mr. Walter Hughes's report show that a variety of nuisances were discovered and abated; 9 houses unfit for habitation were closed; 17 dirty bakehouses and 25 slaughter-houses were limewashed; 62 closets were repaired and cleansed; 8 were done away with, and 13 new ones were erected: the total of the operations amounting to 6,503. During the first six months of the year, a severe epidemic of small-pox occurred in various parts of the town, and 22 cases were removed to the Cottage Hospital. About 160 houses, where infectious diseases had existed, were disinfected. The meat offered for sale in the markets was regularly inspected, and some was seized as unfit for human food. A conviction was obtained, and a fine of £20 was imposed.

Small-pox.

Meat.

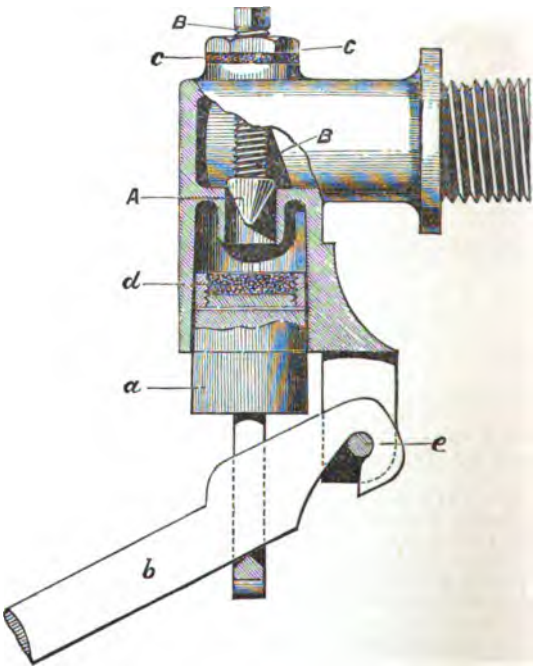
HEBBURN (Population, 16,000).—Mr. James Mitchell was appointed to this district in June 1888, and his report of work done up to the end of the year is fairly comprehensive. He complains that the emptying of ashpits is most indifferently performed in the hands of the contractors, and suggests that the Board should undertake the work. The notices served relative to nuisances, &c., amounted to 151. The lodging-houses, slaughter-houses, &c., were all in good order.

Scavenging unsatisfactory.

ILLUSTRATED SANITARY PATENTS.

18,751. (1888.) IMPROVEMENTS RELATING TO CISTERN BALL OR FLOAT VALVES. WILLIAM HENRY WALLIS, 33, Northam Road, Southampton, and SIDNEY NICHOLS, 46, Brinton's Road, Southampton. [6d.]

These improvements are devised with a view to the construction of a cistern ball valve in such a manner that whilst controlling and regulating the passage noiselessly, it at the same time allows of free access being had thereto (and the flow of water stopped), to enable repairs to be executed either to the valve or cistern without interfering with or reducing the supply of water to other parts of the building.



The improvements are shown in the accompanying plate, and consist of a plug stopper or valve A, provided with a screwed spindle B, adapted to that portion of the usual valve nearest the inlet, this plug serving to control or regulate the flow of water to the cistern passing by way of the ordinary piston valve *a*, actuated from the fulcrumed end of the ball or float lever *b*. The screwed spindle B is furnished with a lock nut C and screwed washer. A water-tight washer *c* being also interposed between the outer casing of the valve and the lock nut,

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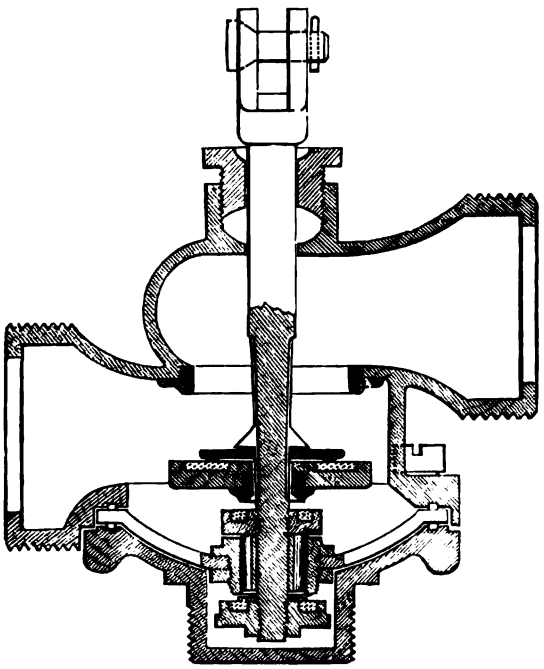
to prevent any possible leakage of water through the screwed opening in which the screwed spindle B is fitted.

To effect the ready removal of the usual piston valve *a* from its surrounding casing, to allow, when required of, the valve facing *d* being replaced or repaired, the end of the ball or float lever is hooked as shown, so that it can be readily detached from the fulcrum *e* on which it works.

Claim.—In ball or float cisterns the employment of screwed spindle, and slotted detachable float lever, &c., as described.

638. (1889.) IMPROVEMENTS IN VALVES FOR THE SUPPLY OF WATER TO WATER-CLOSETS AND OTHER PLACES. GEORGE JENNINGS, Palace Wharf, Stangate, Lambeth. [8d.]

The improved valve, which is the subject of this invention, is constructed so as to remain open and continue the supply of water for a regulated time after the handle of the closet has been released.



The valve, as shown in the plate, is provided with inlet and outlet passages as at *b* and *c* respectively. The first being connected with the supply pipe, and the latter with a delivery pipe connected with the pan of the closet. Between the inlet and outlet is a horizontal partition *d*, into which a valve seating d^1 is inserted, and a valve *e* of considerable area closes upwards against this seating in the direction of the flow. The valve *e* is carried upon a stem e^1, which projects upwards through a stuffing box, and is joined to a lever which is so weighted that it tends to lift the valve to its seat.

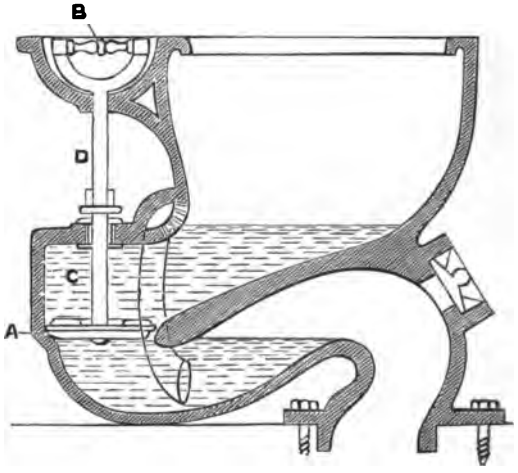
When the handle of the closet is raised the weight also is lifted, the valve *e* is removed from its seat, as shown in the plate, and water passes to the pan. The cavity in the body of the valve is divided into two parts by an india-rubber diaphragm *f*. Water is able to pass from one side of this diaphragm to the other by means of a small passage regulated by a tap. The lower part of the valve stem e^1 passes through the diaphragm, and is connected to it as described hereafter. Hence the valve *e* can only rise to its seat d^1, as fast as the passage of water to the underside of the diaphragm *f* through the regulating tap permits it to do so. In order to allow of the rapid opening of the valve *e*, the valve stem e^1 is arranged to pass by a circular opening f^1, through the centre of the diaphragm it is able to play through the opening for a short distance, and water can pass by the opening from one side of the diaphragm to the other. A valve seat f^2 is formed round the opening on the underside, and upon the lower end of the stem a valve *h* is fixed. When the stem e^1 is pushed down to open the main valve e^1 the lower valve *h* also leaves its seat and allows the water to escape rapidly from the chamber beneath the diaphragm, consequently the diaphragm can yield rapidly to permit of the downward movement of the stem e^1. But when the stem e^1 on the release of the handle is drawn upwards by the weight, the valve *h* at the lower end of the stem e^1 closes to its seat f^2 upon the diaphragm *f*, and then the diaphragm can only yield slowly to permit the main valve *e* to close as water is able to find its way past the regulating tap to the chamber beneath the diaphragm *f*.

Below the main valve *e* there is a third valve fixed upon the stem e^1, and this serves to shut the passage through the main valve. When the main valve *e* in closing approaches its seat d^1, the pressure of the water beneath it lifts it to its seat d^1 before the stem has completed its upward movement, water then is still able to pass by the passage of small area through the main valve *e* until this in turn is closed on the completion of the upward movement of the stem e^1.

The valves are all faced with vulcanised india-rubber, and the seatings are of vulcanite.

1,139. (1889.) AN IMPROVEMENT IN THE CONSTRUCTION OF WATER-CLOSET APPARATUS. TOM STEVENS, Richmond Chambers, Bournemouth. [6d.]

The object of this invention is the construction of water-closet apparatus in such manner as to avoid any accumulation of foul air therein during such times as the apparatus is not in use.



The apparatus is formed as shown in the drawing, and consists of a plug or plunger A, which can be lifted by means of a handle B placed at the side of the basin, or it may be operated by any other suitable device. The space C required for the plug to work in is entirely covered and filled up by water, thereby preventing the accumulation of foul air in the enclosed parts of the apparatus. In order to effect this object the top of the chamber C is kept a little below the surface of the water in the basin while the apparatus is at rest. The rod D operating the plug A passes through a stuffing box and such part of it as is exposed may be provided with a projection which, as the rod is pulled up and down, may serve to actuate a lever controlling the water supply to the apparatus.

Claim.—Water-closet apparatus constructed in the manner described in the specification quoted above.

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1,710. (1889.) IMPROVEMENTS IN THE MEANS OR METHODS OF TREATING OR PREPARING CERTAIN REFUSE MATTER TO INCREASE ITS FERTILISING PROPERTIES. WILLIAM RIDDIOUGH, 3, Green Cliffe, Otley Road, Bradford. [4d.]

This invention relates to improvements in the means or method of treating or preparing human excrement, animal and vegetable matter, ashes, and similar refuse matter comprising what is commonly designated night-soil, and its object is to increase the useful properties of the same when applied as a fertiliser.

Night-soil previously used as a fertiliser has been applied in a comparatively unprepared state, and consequently the hard solid substances, such as ashes, cinders, and bones, mixed with ashpit refuse, are not only of no practical use for this purpose, but become positively injurious as they choke the soil, and frequently damage agricultural machinery. The improvements which form the subject of this invention, consist in grinding or crushing night-soil so as to reduce the solid parts to powder, and thoroughly incorporate its component substances. Preferably a disintegrator is employed for this purpose, adapted to finely divide the solid substances and thoroughly mix them with the remainder; or a species of mixing mill, provided with a revolving pan and crushing rollers is used, having the bottom of the pan perforated to allow the reduced and thoroughly mixed night-soil to pass through.

To the night-soil may be added street sweepings, guano, phosphates, or any special manure.

Claim.—The processes described above.

8,279. (1889.) AN IMPROVED METHOD OF VENTILATING ALL KINDS OF SILK AND FELT HATS. JOSEPH HARRIS, 7, Vernon Street, Eccles, Manchester, and JAMES JENKINS, Talbot Street, Cardiff. [6d.]

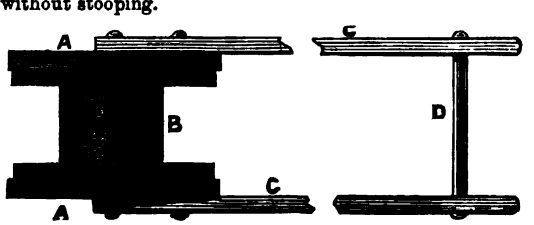
The centre of the crown of the hat is perforated with a circle of small holes, protected from outside dust, &c., by a piece of fine netting fastened between the inside lining and crown of hat.

Fixed in any part of the hat underneath the leather band is a fluted ventilator of glazed cotton or other suitable material, and which is stitched to a flannel band inside the hat and to the base of the brim. Following the course of this ventilator is another one of similar design and make constructed of cork, this latter ventilator is attached to the top of the flannel band inside the hat, and the two ends of the flannel band are attached to the leather hat-band in the usual way. The space occupied by the absorbing flannel band is covered with perforations, and thus a complete free and cool passage of fresh air is secured, it passing through ventilator No. 1, then through ventilator No. 2, and out through the ventilating holes in the crown of the hat.

Claim.—The ventilating contrivances described and illustrated in the specification quoted.

15,068. (1889.) AN IMPROVED APPARATUS FOR WASHING THE FEET AND LOWER PARTS OF THE LEGS. ARTHUR DINGLE, 30, Potter Gate Street, Norwich. [6d.]

This invention refers to an arrangement of brushes connected to a suitable handle that will enable a person to wash and scrub the feet and lower parts of the legs without stooping.



The figure shows how this arrangement is carried out. A and A are flat round brushes, and B a cylindrical brush, the three being secured together and attached to handles C, having a stretcher bar D near the top. The circular shape of the brushes A and A and the cylindrical shape of the brush B enables all sides of the feet and legs to be washed and scrubbed.

Claim.—The combination of brushes as described, and for the purpose set forth.

LIST OF APPLICATIONS FOR PATENTS
RELATING TO SANITATION.

FROM DEC. 2, 1889, TO DEC 20, 1889.

[*This List is specially compiled for the* SANITARY RECORD *by Messrs. Rayner & Cassell, Patent Agents, 37, Chancery Lane, Holborn, from whom all further information relating to Patents may be had on application, gratuitously.*]

December 2.—No. 19,308. DAVID LAW, JOHN LAW, Jun., JOHN LAW, JAMES LAW, & GEORGE GRANT, 62, St. Vincent Street, Glasgow. Improvements in water-closets.

No. 19,309. GERALD TATTERSALL MOODY & FREDERICK WILLIAM STREATFEILD, 148, Wood Vale, Honour Oak, London. A new method of producing and liberating aerial or gaseous disinfectants.

December 4.—No. 19,461. WILLIAM HENRY FRANKLIN, Berrywood Asylum, Northampton. A lead stench-trap for pipes leading from baths, lavatories, sinks, urinals, &c., to main sewers, &c.

No. 19,483. JAMES ROBBINS, 52, Chancery Lane, London. Improved method of applying disinfectants to sewers, gullies, water-closets, urinals, and sanitary appliances generally.

December 5.—No. 19,524. SAMUEL EMPSALL & WILLIAM FISH, 37, Hyndburn Street, Accrington, Lancashire. An improved self-acting (automatic) syphon water flusher for privies or closets.

No. 19,536. ARTHUR MAURICE ROBINSON, 4, Clayton Square, Liverpool. Improvements in sieves for purifiers.

December 6.—No. 19,638. ROBERT HANNAM, 42, Bath Street, Glasgow. Improvements in the sanitary treatment of drains, and in materials to be used therefore.

No. 19,657. WILLIAM DAVIES, 47, Lincoln's Inn Fields, London. Improvements in flushing apparatus more especially adapted for flushing urinals.

No. 19,664. WILLIAM DUNDAS SCOTT MONCRIEF, 86, Newman Street, Oxford Street. Improvements in or relating to urinals.

December 10.—No. 19,801. GEORGE BURGES, Jun., 321, High Holborn, London. Improved bottle-washing machinery.

No. 19,862. JOHN WESLEY HYATT, 28, Southampton Buildings, London. Improvement in the construction of filters and reagent feeders for the same.

No. 19,900. WILLIAM PHILLIPS THOMPSON, 6, Lord Street, Liverpool. Improvements in or relating to dry closets (Isaac D. Smead, United States).

No. 19,922. GEORGE TOM CANNON, Sheep Street, Bicester. A compound medical animal soap.

No. 19,940. JAMES DIXON, 33, Chancery Lane, London. Improvements in water filters.

December 11.—No. 19,947. ALFRED SOUTHALL, THOMAS BARCLAY, & WILFRED FRANCIS SOUTHALL, 7, Staple Inn, Middlesex.

No. 19,955. ALFRED JULIUS BOULT, 323, High Holborn, Middlesex. A new or improved appliance to be used in washing clothes (Elizabeth Lyrham Maybee, New South Wales).

December 14.—No. 20,156. SAMUEL MINTY, 4, South Street, Finsbury, London. Improvements relating to the ventilation of sewers and to apparatus therefor.

No. 20,237. WILHELM RODIGER, 45, Southampton Buildings, London. Improvements in and relating to the manufacture of soap.

December 17.—No. 20,242. EDWARD PHILEMON TIMMINS, 90, Balsall Heath Road, Edgbaston, Birmingham. An improved ash sifter.

No. 20,291. CARL SCHMIDT, 28, Southampton Buildings, London. Improvements in washing machines.

December 20.—WILLIAM ECKERSLEY, 8, Quality Court, London. Improvements in water-waste prevention cisterns for supplying water-closets, urinals, and for other analogous purposes.

SPECIFICATIONS PUBLISHED.—1888.

17,509. SHUTTLEWORTH-BROWN. Squeegee. 8d.
17,962. WILKINSON & ALLIOTT. Refuse destructors. 8d.
16,408. SHARPLES. Flushing water-closets. 6d.
14,663. ROGERS. Syphon cisterns. 6d.

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1889.

1,710. RIDDIOUGH. Treating refuse matter. 4d.
1,863. HALL. Flush bolt. 6d.
1,198. RAMSDEN. Earthenware pipes. 8d.
8,279. HARRIS & JENKINS. Ventilating hats. 6d.
14,165. WEINGOTT. Waterproof garments. 6d.
16,455. JONES. Covers for manhole, &c., openings. 6d.
9,726. BOLUS. Water-closets. 6d.
10,979. MUNDAY & WALKER. Flap valves for sewers. 6d.
8,747. BERESFORD. Water-closets. 6d.

The above Specifications may be had from Messrs. Rayner & Cassell, Patent Agents, 37, Chancery Lane. at the prices quoted.

NEW INVENTIONS.

THE "WALLAS" PATENT INDICATING GRADIENT BLOCK.

THIS invention is designed to assist the sanitary engineer or builder, when laying drain pipes, in obtaining a uniform gradient, and we consider it a valuable appliance. The gradient blocks are made of boxwood, and as our illustration depicts and the description intimates, are enclosed in a box containing 11 accurately guaged for a fall from 1 in 12 inches to 1 in 70 inches. When it is considered that a large proportion of house drains at the present day are laid by mere guess, the advantage of this useful but simple appliance will be appreciated by all engaged in such undertakings. Its use will prevent many disappointments in such work.

A is a perspective view of the Gradient Block, 11 inches long; B, a Section. C, a surface plan, showing Gradient Block resting on Drain Pipe, as seen from ground level of trench. D is an elevation, showing surface of Gradient Block perfectly horizontal on Drain Pipes laid with a fall of 1 in 10 inches. E is a view of neat Portable Mahogany Case, containing 11 Gradient Blocks, accurately guaged to Gradients from 1 in 12 inches to 1 in 70 inches, **specially adapted** for House Drainage Works.

The inventor and patentee of the Indicating Gradient Block is Mr. Irwin C. Wallas, Assoc. San. Inst., Kilburn, N.W.

DR. OVERBEEK DE MEYER'S DISINFECTING APPARATUS.

WE understand that the English Government have had one of Professor Overbeek de Meyer's disinfecting chambers erected in the barracks at Devonport, with a view to a further utilization of the apparatus if approved of. Mr. D. G. Bingham has now been obliged to lay down plant at Utrecht, Holland, for the manufacture of the disinfectors, owing to the increasing demands for them. The exhibition of the apparatus at the Paris Exhibition was a great success, and they have been sent, amongst other foreign countries, to the Phillipine Islands, Guiana, and Buenos Ayres. They have also been ordered by the Spanish Government. One of the advantages of this disinfector is that a small one heated by gas is made at a cost of only £15, which may be used wherever gas is available. Besides being large enough for disinfecting clothing, this is an admirable contrivance for disinfecting letters and parcels coming from infected places. By having a manufactory at Utrecht, Mr. Bingham hopes to supply even a better made article than has hitherto been sent out.

THE medical department of the Russian Ministry of War has decided to establish movable laboratories of toxicological chemistry and bacteriology attached to each army corps. In these laboratories all food supplied to the troops will be analysed.

THE chief characteristics of the mortality returns of Bradford (Yorks) for the third quarter of 1889 were a high mortality from infectious diseases, notably whooping-cough, enteric fever, and diarrhœa, and a low mortality from consumption and diseases of the chest generally.

THE town of Hove has been singularly free from zymotic diseases during the first three quarters of the past year, there having been only 2 deaths within the period from the so-called fatal infectious fevers, one of which was clearly shown to have originated outside the boundaries. Including, however, all cases registered as such, the zymotic death-rate has been only 0·3 per 1,000 during the 9 months ending September 30th last.

COUNTY BOUNDARIES.—The Local Government Board have issued a circular to county councils in England and Wales, in which, referring to the re-arrangement of boundaries, they state that, as the question of areas will have to be considered and determined in connection with the constitution of district councils, it is undesirable that there should now be a disturbance of the existing areas with all the consequent adjustment of properties and interests, when, as the result of further legislation, it is possible that the areas, if altered now, may again have to be altered at no distant date. The Board consider, therefore, that all action should be deferred.

THE following recipes may be found useful in the present free food era:—*Birmingham Soup*: water, 32 gallons; bones, 48lb.; peas, 16lb.; oatmeal, 12lb; potatoes, 12lb.; carrots, 8lb.; onions, 6lb.; celery seed, 1½d.; pepper and salt, 1½d. *Egyptian Soup*: water, 32 gallons; lentils, 40lb.; oatmeal, 8lb.; carrots, 8lb.; onions, 6lb.; celery seed, 1½d.; pepper and salt, 1½d. *Pea Soup*: water, 32 gallons; bones, 48lb.; peas, 32lb.; oatmeal, 8lb.; carrots, 8lb.; onions, 6lb.; dried mint, 1½d.; pepper and salt, 1½d. *Scotch Soup*: water, 32 gallons; bones, 48lb.; pearl barley, 10lb.; rice, 10lb.; sago, 4lb.; carrots, 8lb.; turnips, 8lb.; onions, 6lb.; parsley, 1½d.; pepper and salt, 1½d. Each of the above recipes makes nearly 40 gallons of cooked soup, or enough for 300 children.

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POLICE COURT CASES.

PUBLIC HEALTH ACT (1875).

A Cow Unfit for Food.

On Nov. 21, at the Derby Police Court, before the Mayor and other magistrates, Arthur Cooke, Ashbourn, was summoned by Mr. William Wilkinson, Chief Sanitary Inspector, for having in his possession, exposed for sale for human food, a cow which was diseased, unsound, unwholesome, and unfit for such food.—Mr. Gadsby (Town Clerk) appeared for the prosecution; and Mr. Briggs for the defence.—Mr. Gadsby, in opening the case, said the defendant was a cattle dealer, living at Ashbourn. On Nov. 1 the Chief Sanitary Inspector of Derby heard that the defendant had offered a cow for sale to three local butchers. He accordingly proceeded to the Castle and Falcon Inn, Morledge, in the yard of which he found a cow. It was in a very emaciated condition, and he had it seized. After being seen by a magistrate, it was ordered to be destroyed. It was afterwards found to be suffering from tuberculosis, and he would remind the Bench that any person who ate the flesh of an animal so suffering was liable to contract the disease, and, therefore, it was one of the most serious cases that had come before them for some years. Mr. Wilkinson, inspector of nuisances, said that on Nov. 1 he went to the Castle and Falcon yard, where he found a man named Fletcher in possession of a cow, which he had purchased from the defendant. It appeared to be in a diseased state, and he had it seized and taken before Mr. Bowring, J.P., who ordered it to be destroyed. The same evening he wrote to the defendant about it. In answer to Mr. Briggs he said Fletcher, who had bought the animal, was a milk seller, but the animal had very little milk indeed. If it had not been killed he did not believe that it would have lived for twelve months. Mr. Thomas Allen, butcher, Market Hall, said that on the date in question defendant asked him if he would buy a cow. In answer to witness's questions, defendant said it was "a cow that had got some meat on it." He also said that he wanted £4 10s. for it. Witness told him that a cow of that description was of no use to him. Mr. Thomas Bancroft, butcher, Market Hall, said he saw the defendant at the Castle and Falcon Inn. Cooke asked him if he wanted to buy a beast. Witness then saw the cow in the shed, and he told the defendant that it was of no use to him. It was in very poor condition. In answer to Mr. Briggs, witness said he did not know for what purpose defendant wanted to sell the cow. He had only once before traded with the defendant. Mr. Arthur Chambers, one of the meat inspectors of the borough, said he saw the cow while it was alive. She was "deathly poor." He also saw the carcase after it had been slaughtered. The lungs were diseased, and the animal had been suffering from "grapes." The kidney and heart were also much diseased. He had never seen an old milking cow in as poor a condition as this one. He did not think she would have lived for more than a month or two. Mr. Iliffe, Medical Officer of Health, made a post-mortem examination of the animal, which had suffered from the last stage of tuberculosis. The carcase was very emaciated. He could not say how long the animal would have lived. Mr. Briggs, on behalf of the defendant, said the question was whether upon the evidence submitted they could draw the inference that the defendant had offered the animal for sale for the purpose of food. Friday was not a day when cattle intended to be slaughtered were offered for sale. The defendant brought the cow to Derby to sell, not for human food, but for milking purposes. His client was a cattle dealer, and a most respectable man, who had purchased the cow amongst others, and was offering it for sale in the usual way. The Bench convicted the defendant in a penalty of £5 and costs; £7 11s. 6d. in all, which he paid.

[This is the first case in which, as far as we know, a live animal has been condemned, and the person exposing it for sale fined for so doing. The words of sec. 116 of the Public Health Act seem, however, large enough to meet such a case, as the inspector is entitled to examine and seize "any animal" or "carcase." From the collocation of words in the section, a live animal is apparently intended, and the conviction is therefore authorized by the Act. Probably most inspectors have not up till now considered that they had power to seize live animals. For the future we hope they will be ready to exercise it in proper cases, and so give the public a more efficient protection against being poisoned by unwholesome food.—Ed.]

Unsound Dates.

At the Thames Police Court, Mr. Anderson, sanitary inspector of the Port of London, applied to Mr. Saunders for an order to destroy 500 tons of dates which were lying at the East Quay, London Docks. The dates were all ready to be sold, but they were totally unfit for human consumption. The ship which brought the dates here had been on fire, and the dates were damaged by the water. Mr. Saunders, having seen a sample, directed a summons to be issued against the owner of the dates.

Jerry Building.

At Wandsworth, George Edwards, a builder, appeared to answer an adjourned summons at the instance of the Wimbledon Local Board, for constructing houses in Effra Road, Wimbledon, without covering the foundations with at least six inches of good concrete. Mr. Biron made a personal inspection of the premises, and remarked that the buildings could easily be demolished with the aid of a toothpick. He ultimately adjourned the summons to enable the defendant to comply with the requirements of the Board. Mr. Whitfield, on behalf of the Board, now stated that some concrete had been put down, but very inferior in its quality, and not six inches, as required by the Act. He asked the magistrate to impose a substantial penalty. Mr. Edmunds, who represented the defendant, complained of the pressure on the part of the Local Board. Mr. Biron said he did not see any pressure. He saw people doing their duty. It may be that scamping had gone on to such an extent that the officers were at last alive to their duty. The sooner it was put an end to the better. He fined the defendant 20s., with £2 4s. costs.

An Unwelcome Witness.

At the Liverpool Police Court, before Mr. Edward Whitley, M.P., a lad named John Williams, was charged with playing pitch-and-toss on a Sunday. The defendant's sister was also summoned for having used abusive language to the police officer who had the case in hand. The sister appeared in Court, and stated that in order to attend there that morning she had been forced to leave at home a young child of hers who was dying of scarlet fever. Another of her children was ill in the house with the same complaint, and the baby which she had in her arms was also suffering from scarlet fever. This startling announcement naturally caused an unpleasant sensation in the Court. The presiding magistrate, considerably agitated, promptly dismissed the police charges against the two defendants, and ordered the matter to be immediately reported to the medical officer of health. The constable in the case explained that when he went to the house to serve the summons no mention was made of there being sickness in the place, and he was entirely unaware of it.

MARGARINE ACT (1887).

Selling Margarine for Butter.

The first case under the Margarine Act in Bedford has been heard before the Divisional Bench, when two dealers from Luton, named George and Frank Stratton, father and son, were charged with selling margarine unlabelled, at Kempston. It appeared from the evidence that Superintendent Quenby stopped the younger defendant and asked for a quantity of the butter, but when the lad received such an unusual large order he

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became suspicious and at once said it was margarine, at the time taking a label from his pocket. The lad had sold a quantity of the "butter" for the past 12 months, informing the purchasers that he obtained it from a farmer named Smith, of Ampthill, but in cross-examination he admitted that he knew no one of that name. The analysis of the "butter" showed that it contained 80 per cent. of fat, 12 per cent. of water and curd, and 8 per cent. of butter fat. The defendants were each fined £1, and £1 1s. costs, or one month's imprisonment

PARLIAMENTARY PAPERS ON SANITARY SUBJECTS PUBLISHED SINCE DECEMBER 15, 1889.

(To be had of Messrs. P. S. King & Son, 5, *King Street, Westminster, S.W.)*

Births, &c.—Fifty-first Annual Report of the Registrar-General of Births, Deaths, and Marriages, in England and Wales, being for the year 1888. 8vo. ..... 1s. 3d.

Births, &c., Scotland.—Thirty-third detailed Annual Report of the Registrar-General of Births, Deaths, and Marriages in Scotland. Abstracts of 1887. 8vo. ..... 2s. 1d.

Typhoid.—Mr. Spear's Report to the Local Government Board on the Prevalence of Typhoid Fever in the Urban Sanitary District of Longton, Staffordshire. (No. 48) ..... 6d.

CORRESPONDENCE.

Audi alteram partem.

[*All communications must bear the signature of the writers, though not necessarily for publication.*]

SEWER *v.* DRAIN.

I think the answer given to "S. P. S." in last number of Sanitary Record is incorrect.

I should hold that the sewer described did not belong to the local authority, consequently sect. 15 of Public Health Act will not apply; but see sect. 18 of same Act, which excludes sewers made by private persons for their own profit.

Biggleswade, Dec. 31, 1889. D. Miller.

[We are sorry that our correspondent disagrees with our view of the law. We must refer him to the definitions of "sewer" and "drain" given in section 4 of the Public Health Act, and to the numerous cases which have decided that a drain which takes the sewage of two or more houses thereby becomes a sewer. We know of no case in which a drain similar to that mentioned by "S. P. S." has been held to be private property, so as to relieve the local authority of responsibility for it.—Ed.]

THE ASSOCIATION OF PUBLIC SANITARY INSPECTORS OF GREAT BRITAIN.

At the adjourned meeting held on December 21, 1889, the following resolution was received, and afterwards referred to the Council for consideration:—"That the Council of the R.I.B.A. be asked to define the present status of the sanitary inspector, and having regard to the obvious intentions of the Sanitary Acts of Parliament, the experience of their working since acquired, and the duties actually devolving upon such officers, to further define what ought to be the qualifications of candidates for the said office." The Council consider that the step proposed to be taken by the resolution is of such importance, that the course suggested should not be taken until it has received the sanction of a majority of the whole body, and therefore measures are being taken with that view. The Council will also be pleased to receive the observations of sanitary inspectors who may not be in membership with "The Association or branches," as it is a question which equally concerns all sanitary inspectors.

Samuel C. Legg,
January 9, 1890. Hon. Secretary.

NOTICES OF MEETINGS.

THE SANITARY INSTITUTE.

Parkes Museum, 74A, Margaret Street, W.

At an Examination for Inspectors of Nuisances, held at Manchester, on December 20 and 21, 20 candidates presented themselves. Questions were set to be answered in writing on the 20th, and the candidates were examined *viva voce* on the 21st.

The following candidates were certified to be competent, as regards their sanitary knowledge, to discharge the duties of Inspector of Nuisances:—

Cameron, Allen, Newbottle, by Feuce Houses.
Crossley, James, Town Hall, Salford.
Dean, Samuel Saunders, Hugglescote, near Ashby-de-la-Zouch.
Eddleston, Thomas, 154, Blackburn Road, Great Harwood, Blackburn.
Gardiner, Edwin, 38, Breckfield Road South, Liverpool.
Maclennan, John, Carnock House, Dunfermline.
Milner, William, 18, St. Paul's Road, Preston.
Osselton, Christopher, Houghton-le-Spring, Fence Houses.
Robertson, John Shirras, 4, Belmont Street, Aberdeen.
Sutherland, Walter, 8, Voelas Street, Walton, Liverpool.
Whitehead, James, 19, Rawmarsh Hill, Parkgate, Rotherham.
Wood, Charles Edward, 99, Westgate, Wakefield.

THE INSTITUTION OF CIVIL ENGINEERS.

Established 1818.—Incorporated by Royal Charter, 1828.
25, Great George Street, Westminster, S.W.
Session 1889–90.

Students' Visit, Wednesday, January 15th. The Permanent Sewage Works at Crossness, of the London County Council. (South Eastern Train to Abbey Wood, leaving Charing Cross at 12.20 p.m.)

LOCAL INTELLIGENCE.

At a meeting of the Faversham Board of Guardians, sitting as the rural sanitary authority, it was decided, in reply to a communication from the town council, acting as the urban authority, that they could not offer the council terms upon which they would receive patients at their infectious hospital, as they had only provided sufficient accommodation for the rural district. The borough of Faversham is absolutely without infectious hospital accommodation. A joint hospital board was formed a few years ago, the constituent bodies being the urban and rural sanitary authorities. After many meetings nothing could be agreed upon, and, owing to the difference of opinion, the board was dissolved. In a short time the rural authority erected a hospital for their district on a site given by members of the Hall family, but the urban authority have shelved the matter from time to time, although their obligations have been repeatedly pressed on them by the Local Government Board.

The following increase in salaries have been made by the Waterloo Local Board:—Mr. B. Thompson, Surveyor, £325 to £350. Dr. W. S. Limrick, Medical Officer, £30 to £40.

THE SANITARY INSTITUTE,

74A, MARGARET STREET, W.

EXAMINATION FOR INSPECTORS OF NUISANCES.

Nov. 21 & 22, 1889.

Question 1.—Describe briefly the sections of the Public Health Act which contain provisions against infection.

Answer.—The first of these sections purports to provide for the compulsory disinfection of houses and articles therein after the medical officer of health has certified that it is necessary.

On receipt of such certificate the authority may cause to be served a notice on the owner or occupier to disinfect within a stated time, and on non-compliance may cause the work to be done and sue for a penalty and expenses.

If the owner or occupier are unable by poverty or otherwise to do the work, the authority may, if the occupier permits, do it at their own cost.

The compulsory part of the section is useless, and in practice the occupier's consent is in all cases necessary, for the following reasons:—

The authority cannot delegate their power to serve a notice; they only receive reports once a fortnight or sometimes once a month, and disinfection to be effectual must be immediate.

The Act confers no power of entry in this case, therefore there are no lawful means of ascertaining whether a house has been disinfected or not.

There are other obstructions heaped about the working of the clause, but enough has been stated.

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A local authority may provide a hospital, an ambulance to convey patients thereto, and disinfecting apparatus, in which infected bedding, clothing, &c., may be disinfected free of charge.

Under certain conditions stated, briefly, where a sick person cannot be properly isolated, such person may be removed to hospital by a magistrate's order.

Penalties are provided for the following offences:—

Exposing oneself or permitting another to be exposed in any public place while suffering from infectious disease.

Giving, lending, selling infected articles, or transmitting same without proper precautions.

Entering a public conveyance or permitting another to enter while suffering from infectious disease without notification to driver.

Driver so notified is liable to penalty if he permits the vehicle to be used again without previous disinfection.

Letting house or room which has been occupied by sick person before a medical man has certified that it has been properly disinfected.

Person hiring or offering for hire house or room where a sick person has lodged within the previous six weeks, if such hirer on being questioned by person seeking to hire as to the existence of such disease, gives a false answer. Imprisonment may be awarded in this case.

The Local Government Board may make special regulations, having the force of law, where a general epidemic is threatened.

Question **2.**—Mention the provisions of the model bye-laws of the Local Government Board relating to earth closets, privies, ashpits and cesspools.

Answer.—Separate sets of bye-laws refer to periodical cleansing and to construction.

The intervals suggested for cleansing are:—

For earth closets with movable receptacles, for all privies and for ashpits, weekly.

For earth closets with fixed receptacles and for cesspools, every three months.

The duty of emptying is laid on the occupier.

The chief points treated of in the building bye-laws are as follows:—

Privies and closets of all descriptions, also ashpits and cesspools must be well ventilated, one side of every closet within a house must be an outer wall. All receptacles for filth, dust, or ashes, and all cesspools must be of impervious materials.

Excepting a water-closet they must not be connected with drain or sewer.

Receptacles must be of limited size, varying with the frequency of collection of contents.

"D traps" and "containers" to water-closets are forbidden. Water-closet basins must be so formed as to retain water for the soil to fall into clear of the sides.

Proper apparatus must be provided for flushing of water-closets and application of deodorant in earth closets, and privy ashpits must be so made that ashes can be thrown on soil.

Privies, cesspools, and ashpits must be kept at a given distance from sources of supply of water for drinking, for domestic purposes, or for manufacturing drinks.

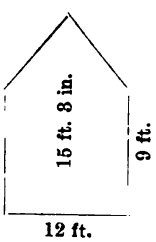
Ashpits must have proper doors and coverings, cesspools to be properly covered.

Privies, ashpits, and cesspools to be so constructed as to admit of easy removal of contents, and so placed that it shall not be necessary to remove the contents through any building in which any persons live, work, or habitually assemble.

Floors of ashpits and privies must be above the level of adjoining ground.

Soil-pipes must be ventilated by a pipe of equal bore in continuation thereof, carried up to a safe height and position without avoidable bends.

Question **3.**—What is the greatest number of persons that should be allowed to sleep in a dormitory 39 feet 6 ins. long, of which the accompanying sketch is a cross section, and how many cubic feet will it contain?



Answer.—In fixing the number of persons to be allowed to occupy a sleeping-room the following points have to be taken into consideration:—

(1.) Who are the persons—men, women, or children, or a mixed community, or, to put it another way, what is their average weight?

(2.) The proportion of floor area to cubic space.

(3.) The means of ventilation and warming.

(4.) Deductions to be made from the gross cubic area on account of room taken up by the bodies of sleepers, furniture, beds, bedding and any unventilated or ill-ventilated recesses.

Assuming that the people to be lodged are a fair average of all ages and sexes, the cubic space to be allowed for each ought under ordinary conditions to be 1,000 feet, but considerations of expense would generally prevent this being given. Three hundred feet is the quantity specified in the model bye-laws for common lodging-houses, and two children under ten count as one adult. This scale may be adopted in the present instance.

It is assumed that the room sketched will be well ventilated by special inlets, a fireplace and chimney at each end, and a ridge ventilator to open and shut.

The proportions of cubic area to floor space have to be examined.

The floor space equals $39\frac{1}{2} \times 12 = 474$ sq. feet.

The height is $15\frac{1}{2} + 9 = 24\frac{1}{2} \div 2 = 12\frac{1}{4}$ ft.

Some authorities require that floor area should equal $\frac{1}{10}$ of the cubic space, a condition which the room under examination about fulfils, other authorities take into calculation all space up to 14 feet from the floor but none above.

Deductions for furniture, bedding, &c., would in practice be calculated from actual measurement; there being no data to go upon in the present case, 30 feet per head is allowed on this account, making in all 330.

The cubic capacity of the room will be—

area × height = $474 \times 12\frac{1}{2} = 5,747$ cubic feet.

The number of persons to be allowed to occupy the room under the conditions before stated will be—

$$330\overline{)5747}\,(17$$
$$330$$
$$2447$$
$$2310$$
$$137$$

Say 17 adults and one child under ten.

Question **4.**—In what way may water be polluted in the mains, and what precautions are necessary to prevent it?

Answer.—Pollution would occur either through defective joints in the mains themselves, or by the open ends of the house service pipes which they supply.

It would happen from either cause at such times as the mains are partially empty, as, for instance, when, under the intermittent system of supply, the water has been "turned off," and the draught of water from the lower part of a main has created a partial vacuum at the upper end. At such times sewage escaped from the sewers, and coal gas from leaky gas pipes, has been drawn through bad joints in the mains, and filth from privy pans, and even blood from slaughter-houses, besides foul air from various sources have been sucked in by the service pipes.

The adoption of the system of "constant service" (in its integrity) both diminishes risk and renders the detection of possible sources of pollution more easy. By waste-water meters and other appliances, defects in the mains can be localized and amended; the disconnection of water-closet from house service by "service boxes" for the prevention of waste, the stronger pipes and better fittings rendered necessary, all tend to diminish risk of pollution.

Water may be fouled in the "dead ends" of mains little used, by the constant deposition of iron rust and suspended impurities. But in a well-devised system the pipes will be so laid as to maintain a constant circulation throughout the system or section of a system, and any "dead ends" unavoidably retained frequently flushed.

Question **5.**—A house is found to be unhealthy, there are occasionally offensive smells perceived both in the basement and upper rooms. What is the most likely cause of this, and how would you proceed to investigate it?

Answer.—The most likely cause would be some defect or defects in the drains or waste pipes, acting as inlets for foul air from the drains when the wind blew in some particular direction, or at times of change of weather.

The smell might originate solely in the basement, and thence ascend, or there might be faults in the waste pipes above as well as something wrong below.

In any case the basement should be first examined for dry traps, sinkings in floor, wet places in floor or walls, draughts of air from other than legitimate inlets. A lighted taper is useful to detect these latter by its flickering.

Information should be sought as to the general lay of the drains, possibility of existence of old cesspools, catchpits, masons' dip traps, traps on the line of drain interrupting ventilation. If the outlet can be got at, or there is a manhole conveniently near, whitened water should make its appearance soon after being poured down a gully. Delay or undue discolouration shows that there is a sinking or a catchpit somewhere.

Examine whether sink, bath, cistern, and lavatory wastes are properly disconnected; whether there is an old pan closet, if the drains are ventilated; are there any visible flaws in soil or waste pipes; are the rain-water pipes disconnected; is there a soil-pipe ventilator, and does it discharge safely outside the house or under the roof within. Smoke applied at the low level ventilating inlet should quickly appear at the high level outlet if the ventilation works properly; with the outlet closed, it will be seen to issue from any faults in the visible pipes, and may be detected by smell in dark corners below.

If it can be conveniently done, the drains may be tested by the water-pressure test, *i.e.* the outlet closed, the whole system filled to as high a level as possible, and note taken of any loss of head.

The smell from peppermint oil will sometimes escape where smoke will not.

Some person other than the inspector should pour it down a detached gully, and follow up with plenty of hot water, and, after doing it, should stop where he is or get away altogether, so as not to spoil the test by carrying the scent about with him. Or this may be avoided by using the capsules that dissolve in the drain.

Question **6.**—What are the possible causes of damp in dwelling-houses, and what steps would you take to remedy the defects?

Answer.—The walls of a newly-built house are damp from water used in mixing the mortar, and also that absorbed by the bricks, which are (or ought to be) separately dipped before laying, to remove dust and facilitate adhesion of mortar. The house should be well dried and aired before occupation.

Where foundations have been laid in a wet, undrained sub-soil, water will be absorbed, and in the absence of an efficient damp course will be drawn up by capillary attraction far above the surface of the ground.

This could not occur where there are proper building bye-laws efficiently administered, when it does the site must be drained, and a damp course put in by underpinning.

Where a drain unprotected by a relieving arch, or otherwise, passes through a wall near its foot, the wall in settling may break the pipe and the drainage will wet the wall; any defect in a drain laid near a wall may have the same effect. The wall of a scullery, where the sink drain passes through by a channel made in the brickwork, instead of by an impervious pipe, will often be wet for many feet around. The obvious remedy is to relay and amend the drains, keeping them if possible outside the house altogether, and to fix impervious discharge pipes.

Basement walls are liable to become wet when in contact with damp soil, even when there are drains and damp courses. In this case a "dry area" must be formed, either by building a second thin wall outside and a few inches away from the main wall, or by placing slabs so as to rest against the wall at top, and on the ground a few inches from the wall at bottom.

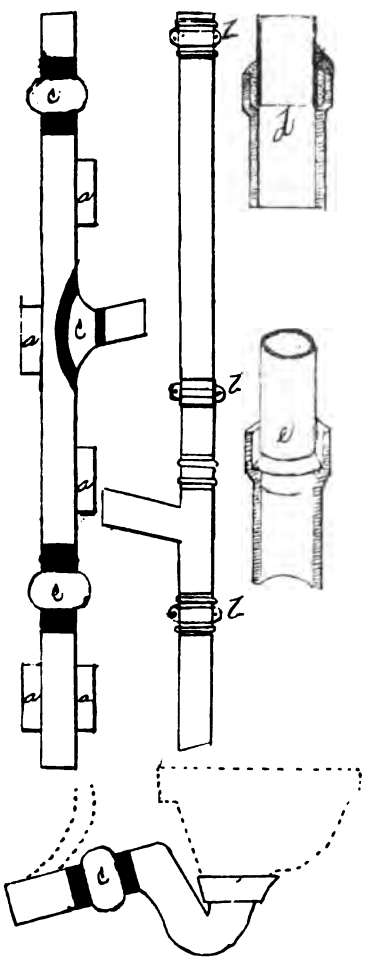
Exposed walls, especially near the sea, are rendered damp by drifting rain. They may be protected by covering the whole surface with slates nailed to battens, by rendering with cement, by rough casting, *i.e.* a coat of mortar set thick with clean, fine gravel, by the application of a silicate solution, or by tarring the wall. Some other expedients are used abroad that need not be referred to.

Walls are wetted for want of proper spouting, or by a broken spout or down pipe, by water entering through a broken roof or an uncoped parapet, and by the leaking of cisterns and service pipes. The remedies for these defects need no explanation.

Finally a wall may attract and retain damp if salt water has been used to mix the mortar. Avoid using it.

Walls purposely built hollow, with iron ties for bond, remain dry inside though wet without.

Question **7.**—Describe the fixing of a soil-pipe, showing by sketches the various connections.



Answer.—It is assumed that the drain head has been brought up to and laid in the proper position, the last pipe, a bend, being placed but not fixed.

The mode of fixing the soil-pipe differs with the material used and the position of the pipe. A lead pipe requires to be supported at frequent intervals (3 or 4 feet), and so must be entirely supported by the wall; with iron pipe, the intervals may be greater, each pipe is about 6 or 7 feet long, and is supported at its head. An iron pipe might with advantage be supported by a foot resting on a firmly founded stone slab. This is inadmissible with lead from its liability to "creep," that is to expand with heat, its weight preventing it regaining its position on contraction. For this reason also, frequent points of support are needed. Lead pipes are 6 to 12 feet long, and should be supported at every 3 or 4 feet.

The pipe, whether of lead or iron, being temporarily adjusted and supported in its place, the bottom meeting but not resting on the drain head; the lead "tacks" *a a a* are spiked to the wall if the pipe be of lead, or spikes driven through the ears attached to the iron collars *b b b*. In good work the spikes would be driven into wooden plugs let into holes bored in the bricks, but they are often driven into the mortar joint.

Lead pipes are joined together by "wiped" joints *c c c*, iron pipes by a spigot and socket joint packed with red lead and hemp, or (especially if the soil-pipe must be inside) run with lead and "batted." These joints are too often very imperfectly secured by putty.

Unless the iron socket be well filled and the joint "weathered," the head will be split by frost.

The pipes are fixed in succession to the top.

There are other methods of fixing, as by flanged joints resting on plates let into a "raglet," or corner; the above described are the most common.

The joining of soil-pipe to the stoneware of closet needs great care. A lead trap joined to a lead branch or a lead soil-pipe admits of all joints being securely wiped; where stoneware joins metal, or lead joins iron, failures from unequal contraction and expansion have to be guarded against. A "slip" joint is often made between lead and iron, *i.e.* the lead opened, the iron pipe inserted, and joint made good with hemp and red lead. A flanged joint with an elastic disc between, and screws to draw flanges together, is better, or a rubber band may be used over a red lead joint, either with or without a compressing band of metal tightened by screws.

The pipe being otherwise fixed complete, the drain head is removed, cleaned, and joints made good at either end. One way of doing this is shown at *d*, applicable for either iron or lead, another at *e*, where a lead pipe is made to enter the stoneware, and a flange meets the stoneware shoulder. Melted resin, resin and brickdust, sulphur, or cement may be used to make good, most frequently cement. A bit of paper or hemp should be used with joint *d* to prevent the cement getting inside.

Question **8.**—In what circumstances, when proceeding under the Public Health Act, 1875, is it necessary to prove that a nuisance is injurious to health?

Answer.—Such proof is not necessary under any circumstances. A standard work of reference on sanitary law says that it is, and this view has frequently been adopted by magistrates and by the Clerks of Sanitary Authorities.

It may, however, be shown from the Act itself that this opinion is incorrect, and, what is more to the point, there is a legal decision on the subject.

That the term "nuisance," as used in the Public Health Act, 1875, does not of necessity mean something "injurious to health" may be clearly seen from a part of the scavenging clauses. Under these clauses it is a punishable offence for any person to keep a pig in a dwelling-house "so as to be a nuisance to any person." Clearly this is a "nuisance" which need not be injurious to health, for there is no reference to health in the clause at all.

The so-called "definitions of nuisance," in sect. 91, refer to (1.) any premises in such state; (2.) any pool, ditch, &c., so foul; (3.) any animal so kept as to be; (4.) any accumulation which is "a nuisance" or "injurious to health."

Immediately following are named certain offences which are "dangerous or injurious to health." The words of this section, "nuisance or injurious to health," have been interpreted to mean "nuisance *and* injurious to health." If this is right, the words next following would mean "dangerous *and* injurious to health." But such a reading is absurd.

The words "nuisance or injurious to health" occur again in the "Offensive Trades" clauses.

In a prosecution instituted under these clauses in which "nuisance" was alleged, the case was dismissed because no proof was given that the nuisance was "injurious to health."

On an appeal the judge ruled that the words of the Act were to be understood in a disjunctive and not in a conjunctive sense, that a "nuisance" was one offence, and something "injurious to health" another and a separate offence, that there might be nuisance and yet nothing injurious to health, and *vice versâ*.

Further, that any indictment alleging something to be "a nuisance and injurious health" would be bad as alleging two separate offences.

Doubtless this ruling would hold good and applicable to other parts of the Act worded in a precisely similar manner.

Question **9.**—Mention some of the most important provisions of the Privy Council's Milkshops, Dairies, and Cowsheds Order of 1885.

Answer.—Cowkeepers and milksellers to be registered by the local authority of the district in which they carry on their trade.

Cowsheds, dairies, and milkshops must be properly ventilated and lighted, and have proper arrangments for water supply, cleansing, and draining.

No person suffering from infectious disease, or in a condition to communicate infection, may take any part whatever in the production, distribution, or storage of milk, or handle any milk vessels.

It is unlawful to occupy as such any milkshop or dairy having within it, or in direct communication, any water-closet, privy, or cesspool, after the expiration of a month's notice from the local authority.

Local authorities may frame regulations for inspection of cattle, for securing cleanliness of milk shops and milk vessels, and for prevention of infection.

Milk from a diseased cow must not be mixed with other milk, or sold or used for human food; unless first boiled it must not be used for food for animals.

Power of entry is conferred on the local authority by the Contagious Diseases Animals Act.

Question **10.**—What powers have inspectors of nuisances with reference to offensive street gullies and sewer ventilators, house refuse, removal of manure from mews, and general scavenging?

Answer.—This depends upon the sense in which the word powers is used. Except for the purpose of seizure of unsound food the inspector has no power (properly so called) under the Public Health Act, that is, the power of taking independent action.

At first sight it would appear that an inspector is endowed with some power under the scavenging clauses to enable him in an urban district to procure the summary removal of accumulations such as manure in mews, house refuse, &c., but on closer examination it will be seen that he can only serve a notice to remove in 24 hours; no penalty is attached to non-compliance with such notice whatever.

The power of seizure and sale of the offensive matter, which alone would make the clause effective, is vested in the authority, and there is nothing in the Act enabling this power to be delegated.

The only other power (if such it can be called) with reference to the matters named in the question, is the power of reporting to the Authority a thing which anyone else may do. Nuisances from street gullies, sewer ventilators, house refuse and manure, would be reported as nuisances; also would be reported any breaches of the several bye-laws requiring periodical removal of house refuse (where the work is not done by the authority) or of manure from mews, where, in the case of mews, the authority have either made bye-laws or given notice under the scavenging clauses of the Public Health Act for periodical removal.

Removal of house refuse where done by the authority is a work for the prevention of nuisance, and as such an inspector may, under the General Orders of the Local Government Board fixing the duties of his office, be called upon to supervise.

With general scavenging, by which is understood to be meant road scavenging, the inspector has nothing whatever to do; it is the surveyor's business if the authority be a road authority or employ a surveyor.

A rural inspector might be appointed to act as surveyor for this or any other purpose of supervision of works of a rural authority, but if so he acts as surveyor and not as inspector; the offices and their duties are essentially separate and distinct, notwithstanding that they may be held by one person.

EXAMINATION FOR INSPECTORS OF NUISANCES.

MANCHESTER, DECEMBER 20 & 21, 1889.

Question **1.**—Give a list of the several Acts which are connected with the duties of a sanitary inspector.

Answer.—The Public Health Act, 1875. Parts relating to sewerage and drainage; privies, water-closets, &c.; scavenging and cleansing; water supply; cellar dwellings and lodging-houses; nuisances; offensive trades; unsound meat, &c.; infectious diseases and hospitals.

The Public Health Water Act, 1878.

Sale of Food and Drugs Act.

Contagious Diseases Animals Act, so far as regards milkshops, cowsheds, and dairies.

Canal Boats Acts, 1877-84.

Margarine Act, 1887.

Sale of Horse-flesh Act, 1889.

Rivers Pollution Prevention Act.

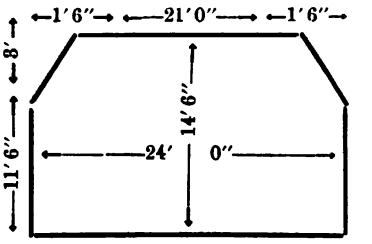
Hop Pickers' and Fruit Pickers' Acts.

Question **2.**—State the most important provisions of the Milkshops, Dairies, and Cowsheds Order of the Privy Council, June 1885, and mention any points that should be specially provided for by bye-laws under this order.

Answer.—See reply to Question 9 Examination of November 21.

Question **3.**—What is the superficial area of the accompanying figure?

What is the largest number of adults that should be allowed to sleep in a room of this size and shape on plan, and 10 ft. 6 in. high.



PLAN OF ROOM.

Answer.—Read reply to Question 3, Examination of November 20.
Area 14′ 6″ × 24′ − 3′ × 1′ 6″ = 343½′.
Cubic contents 343½ × 10½ = 3607′.
Number of inmates 3607 ÷ 330 = 11 nearly.

14′5	343′5	330) 3,607 (11
24	10′5	3,630
580	17175	
290	34350	
348′0	3606′75	
4′5		
343′5		

Question **4.**—In what ways may water become polluted after delivery into houses (*a*) under constant service; (*b*) under intermittent service?

Answer.—The manner in which water in house pipes may be polluted by the open ends of temporarily empty pipes, either under the constant or intermittent system, is described in reply to Question 4, Examination of November 20. Water delivered by intermittent service is also liable to be polluted in the cistern or other vessels used for storage.

Such cisterns are frequently placed in dark confined places where they cannot be conveniently got at for inspection or cleansing, or are exposed to pollution from soot, dust, or by mice, rats, or birds falling in and getting drowned. They are rarely if ever cleansed in any case.

The overflow pipe may go direct into a drain; the head of a soil-pipe has been sometimes brought up through the cistern, and utilized for an overflow. In either of these cases the water will absorb foul gases from the drains.

The cistern may be used for water-closet service as well as for house supply, and so be liable to pollution.

In very poor neighbourhoods water is stored in wooden casks or tubs, and sometimes in the most unlikey and improper of house utensils.

Water may take up lead from new and unprotected lead service pipes, especially if it be very pure and soft, or, as in the case of certain moorland waters, contain acids.

Extensive corrosion frequently occurs about the water-line of lead lined cisterns, and being dissolved renders the water unwholesome.

Question **5.**—To what points would you specially direct your attention in inspecting the drainage and sanitary fittings of a dwelling-house?

Answer.—For points to be looked to in inspecting an old system of drainage, see reply to Question 5, Examination of November 20.

New drains should be inspected before they are covered up, tested by water pressure, and all defects amended before filling in.

The stoneware pipes should be straight, sound, non-porous, truly cylindrical, the collars whole, and made as part of the pipe, not put on afterwards.

The drains should be laid in straight lines, with a uniform gradient, minimum fall 1 in 40 for 4-inch, 1 in 60 for 6-inch pipe; a smaller pipe opening into a larger one above invert of the latter.

Junctions to join by an easy bend in direction of flow of stream, bends where unavoidable formed by an easy curve; if they cannot be formed in floor of a man-hole at least put in a cleaning cap.

Pipes to be bedded in concrete, or at least in good puddle, joints preferably of cement, well worked in over gasket rammed into socket Trenches to be very carefully filled to avoid damage to pipes or joints.

A syphon bend to be fixed as near sewer as possible, and on the house side of it a ventilating shaft for inlet, the outlet to be a pipe carried from drain head above eaves of house, and ending away from skylight or garret windows.

All openings into drains to be outside house, except that from a properly trapped water-closet.

Soil-pipe not less than 4 inches diameter carried up as ventilator, full bore without bends, may serve to ventilate drains; a separate shaft is better.

Water-closets, sinks, baths, urinals, and lavatories to be placed against an outer wall (except for water-closets); their wastes to have lead bends to form trap and to discharge in the open air 18 inches from a trapped gully. Rain water down spouts to discharge similarly.

If part of drain must run under house, a cast-iron pipe carried through above floor level is a better arrangement than stoneware

Google

pipes below floor, bedded in concrete, as sanctioned by Model Bye-Laws.

Where water-closets one above the other discharge into the same soil-pipe, a ventilating pipe must be taken off from near the higher part of junction to prevent the flush of upper closets breaking water seal of traps of lower ones.

Question 6.—How do you recognize unwholesome meat, fish, and vegetables, and what are the powers under which they can be seized and condemned?

Answer.—Principally by appearance and smell. Unwholesome meat has frequently a moist, sodden appearance, want of firmness to the touch, an unusual, or, in cases of commencing decomposition, a bad smell, and may be green in parts.

A knife driven in to the hilt will meet with unequal resistance, and on being withdrawn may smell badly. Doubtful odour may be developed into one decidedly bad by chopping up a portion and soaking it in hot water.

Trimming of a joint or carcase in unusual places indicates that signs of disease have been removed; the liver and lungs should be searched for and examined for disease, and in the case of a cow killed after calving, the udder.

Unsound fish will be soft and flabby, the eye sunk, the gills will have lost their bright fresh appearance and smell suspiciously; there may be a slight greenness over the internal organs showing commencing decomposition.

Vegetables may deteriorate very considerably before showing positive signs of unwholesomeness, especially those kinds as cabbage, &c., which can be freshened up with water. Bad smell or discolouration both show commencing decomposition, and justify seizure.

Under the provisions of the Public Health Act, medical officers of health or inspectors, either alone or by an assistant, may seize and carry before a justice any of the articles enumerated in the Act (but none not included therein).

The food must be exposed for sale, or deposited in some place and intended for human food. A cart conveying meat, &c., is a "place" within the meaning of the Act. It is the justice who condemns, and not the officers or any veterinary surgeon called in to strengthen the case.

He must himself be of opinion that the food is unsound; the case may be dismissed if the condemning justice admits, on being called as a witness, that he was guided solely by the opinions of others.

Under the Markets and Fairs Clauses Act, a market inspector may seize any unwholesome provisions whatever brought to market.

He is not limited to certain things, and as it is an offence to sell, as well as to expose for sale, prosecution is not barred, as under the Public Health Act, by the fact that an article being already sold cannot be seized while exposed for sale.

Question 7.—Enumerate what are considered infectious diseases. Describe the method of completely disinfecting an infected room and its contents.

Answer.—Under the provisions of the Act for Notification of Infectious Disease passed last year any communicable disease may for the purposes of the Act be declared infectious by a local authority.

The Parliamentary Select Committee of 1882 on Police and Sanitary Regulations recommended that for the purpose of notification the following diseases should be declared infectious:—

Small-pox, cholera; typhus, typhoid, scarlet, relapsing, continued, and puerperal fevers; scarlatina, and diphtheria.

Some authorities who procured Special Notification Acts prior to the passing of the general Act of last session have added to the above list measles, whooping-cough, and erysipelas.

Many other diseases are infectious, as influenza, german measles, chicken-pox, all common in England, but not generally regarded as dangerous.

Tubercular consumption is communicable in several ways, and might fairly to be classed as infectious.

The contents of an infected room requiring treatment will (or may) include:—

1. Beds, mattresses, and bed and body linen fouled by the discharges of the patient.
2. Carpets, curtains, hangings, clothes, and bedding possibly infected, but not foul or wet.
3. Furniture.

Foul beds and mattresses are difficult to purify, it is best to burn them.

Foul linen of little value may be disposed of in the same manner; if it is to be kept it should be soaked in water containing chloride of lime, 2 ounces to a gallon, washed, and well boiled.

Articles in class 2 may be purified in a disinfector; an apparatus in which steam is used is the best, and they are superseding dry heat.

The articles must be dry when put in.

If stained articles are put in the heat will fix the stains; for this reason, disinfection by washing and boiling (which is perfectly effective) is recommended for fouled linen.

Whatever is taken from the house must be removed in a closed van, or otherwise so as to prevent chance of exposure.

The room itself should be fumigated with sulphur (1 lb. to each 1,000 cub. ft.), and kept closed at least 12 hours. It should be then thrown open to the wind and air and thoroughly ventilated; the walls cleared of paper and scraped, the paper and scrapings must be burnt in the room, the walls and ceiling are then lime-washed.

It is usual to wash all woodwork, floors, doors, windows, skirtings, and furniture with water containing carbolic acid; but the only sure germicide is bichloride of mercury, one part to 5,000 of water. To ensure its taking effect a previous washing with water is necessary.

Bichloride of mercury is intensely poisonous, and should be used with great care and under skilled advice.

Question 8.—State the chief provisions of the Model Bye-Laws of the Local Government Board, with reference to the trade of a gut-scraper, blood-boiler, fellmonger, and soap-boiler.

Answer.—Gut-scrapers and fellmongers are subject to very stringent rules as to cleanliness.

Floors to be cleared of refuse daily, and thoroughly cleansed, all waste material placed in closed vessels, and removed from the premises promptly.

The water in tanks and other receptacles used by a fellmonger to be frequently changed, and decomposed skins promptly removed.

In blood boiling and soap boiling offensive vapours are given off which must be either discharged at such a height as to cause no offence, or, as an alternative, passed through fire either with or without previous condensation.

Blood-boilers and soap-boilers must store their materials in such manner as to prevent the emission of offensive effluvia; the gut-scraper must keep all undried guts in a closely-covered non-absorbent receptacle.

Fellmongers' and gut-scrapers' floors, ceilings, &c., to be periodically lime-washed; the former twice, the latter four times a year.

The bye-laws for all four trades have similar clauses, requiring that drains shall be kept in good order; that the officers or any committee of the authority shall be admitted at all reasonable hours; and for penalties for breaches of the rules.

Question 9.—Describe the relative advantages of water-closets, and of the pail system for the removal of excreta.

Answer.—By the water-closet system excreta are removed out of the house and off the premises at once: with pails the contents are stored for a time, removal is generally weekly; more or less effluvia is given off meanwhile, and disease germs retained so as sometimes to cause danger to health.

Pails are, or ought always to be, outside the house, nuisance and danger are thus minimised; the water-closet, as usually constructed, has an opening directly communicating with the drains, and placed within the house, so that in the event of the water seal of the trap being broken, or should there be a faulty joint between trap and soil-pipe, sewer gas may be introduced into the dwelling.

Where middens must be abolished, pails are less costly to house-owners to provide (though more expensive to the Corporation to work), and for this reason are more willingly adopted by property owners.

Both systems are liable to abuse by poor and reckless tenants; any form of water-closet may be choked and rendered unworkable; pans are wrongly used as receptacles for liquid sewage.

It is easier to get right anything wrong with the pans, than it is to put in order a choked water-closet.

Pails cannot be used in crowded towns where there is no space outside the dwellings to set them.

Water-closets are inapplicable to rural districts without a regular water service or proper sewers.

In such places the use of dry earth, if the tenants will take the trouble, quite prevents nuisance.

In towns nuisance from pails may be diminished by the use of the Goux system, which consists in lining the pan with any fibrous absorbent material cheaply obtainable.

To sum up, it may be said that a well constructed and properly placed water-closet is the best form of closet where circumstances admit of its being used; the pail closet is the next best where there must be either a midden or a pan.

Under the most unfavourable circumstances it is better than a midden.

APPOINTMENTS.

Medical Officers of Health.

Atkinson, Francis Edward, L.R.C.P.Lond., M.R.C.S.Eng., has been re-appointed Medical Officer of Health to the Craven Combined Districts, which will include the new district of Sedbergh.

Bowhay, Albert, L.R.C.P.Lond., M.R.C.S.Eng., L.S.A., has been appointed Medical Officer for the Calstock District of Tavistock.

Brown, John, M.D.Vict., B.S., D.Sc., L.R.C.P.Lond., has been re-appointed Medical Officer of Health to the Borough of Bacup, and Physician to the Sourhall Fever Hospital.

Burkitt, J. Colley Smyth, M.D. and M.C.L.Irel., has been re-appointed Medical Officer of Health to the Whitwick Urban Authority.

Corcoran, Thomas, L.R.C.S.I., L.A.H.Dub., has been appointed Medical Officer of Health to the Loughborough Rural Sanitary Authority, *vice* Dr. W. Grimes Palmer, deceased.

Jackson, J., L.R.C.P.Edin. and L.M., F.R.C.S.Edin., &c., has been appointed Medical Officer of Health to the Denholme Urban Sanitary Authority.

JOLLY, Sydney Blake, M.B.Cantab., M.R.C.S.Eng., L.S.A., has been appointed Medical Officer of Health for the Lewisham District.

KEMPE, Arthur Wightman, M.R.C.P.Edin., L. and L.M., M.R.C.S.Eng., has been re-appointed Medical Officer of Health to the Budleigh-Salterton Urban Sanitary Authority, at the usual salary and terms.

LAVERICK, J. T. B., M.B.Glas., C.M., has been appointed Medical Officer of Health for the Hinderwell Urban Sanitary District, *vice* J. Valentine Laverick, L.R.C.P.Lond., L.F.P.S.Glas., L.R.C.P.Edin., resigned.

LING, Charles A., M.R.C.S., L.S.A., has been appointed Medical Officer of Health to the Colchester Port Sanitary District.

MELLER, Charles Booth, L.R.C.P.Edin., L.M., M.R.C.S., L.S.A., has been appointed Medical Officer of Health for the Cowbridge District of the Bridgend and Cowbridge Rural Sanitary Authority.

MUIL, William, M.D.Aberdeen, M.B., C.M., has been re-appointed Medical Officer for the Kirkby-Moorside Rural District.

OATES, J. H., M.R.C.S.Eng., L.R.C.P.Edin., has been appointed Medical Officer for Soothill Nether, Dewsbury Union.

RANDALL, Wyndham, L.R.C.P.Edin., M.R.C.S.Eng., has been appointed by the Bridgend Rural Sanitary Authority Medical Officer for the Bridgend District, at £75 a year.

RODEN, Percy Austin, M.B.Aber., C.M., has been appointed Medical Officer of Health to the Droitwich Urban Sanitary Authority, at a salary of £20 per annum.

ROGERS, George Arthur, M.R.C.S.Eng, L.S.A., has been re-appointed Medical Officer of Health for the Limehouse District.

RYGATE, Brougham Robert, M.B.Durh., M.R.C.S.Eng., L.S.A., has been re-appointed Medical Officer of Health for the Parish of St. George-in-the-East.

STILL, George Cardno, M.B.Aber. and C.M., has been appointed Medical Officer of Health to the Shepshed Urban Sanitary Authority.

STIRLING, Alexander Williamson, M.D., has been appointed Medical Officer of Health for Grays, *vice* S. J. J. Kirby, M.D., resigned.

THOMSON, Theodore, M.B.Lond., L.R.C.P., L.R.C.S.Edin., has been re-appointed Medical Officer of Health to the Sheffield Town Council, at a salary of £500 per annum.

WALLIS, P. E., M.R.C.S.Eng., L.R.C.P.Edin., appointed Medical Officer of Health to the East Grinstead Urban District.

WHYTE, Andrew, M.D.Aber., M.B., C.M., has been appointed Medical Officer of Health to the Merthyr Cynog Rural Sanitary Authority, *vice* Dr. J. Williams, resigned.

WOLVERSON, Thomas, L.R.C.P.Edin., M.R.C.S., has been appointed Medical Officer for the 2nd District of the Wolverhampton Union.

WOOD, R., M.D.St. And., M.R.C.S.Eng., L.S.A., has been re-appointed Medical Officer of Health to the Driffield Rural Sanitary Authority, at a salary of £80 per annum.

POOR-LAW MEDICAL OFFICERS.

BARFORD, A. M., M.R.C.S., L.R.C.P.Lond., has been appointed Medical Officer to Bracknell Union and District, Berks, *vice* Thomas Croft, M.R.C.S.Eng., resigned.

BARNETT, Horatio, L.R.C.P.Lond., M.R.C.S.Eng., has been appointed Medical Officer for the Fourth District of the Church Stretton Union, *vice* Cecil A. P. Osburne, L.R.C.P., &c.

BOSWELL, J. J., M.D., L.R.C.P.Lond., has been re-appointed Medical Officer to the Port and Union District, Faversham.

BURD, George Vanhouse, L.R.C.P.Edin., and L.M., M.R.C.S.Eng., has been re-appointed Medical Officer for the Northlew and Bratton Clovelly Districts of the Okehampton Union.

CAUDWELL, Henry, L.R.C.P., L.R.C.S. and L.M.Edin., has been appointed Medical Officer to the Woodstock Union Workhouse, and Medical Officer and Vaccinator to the No. 1 District of Woodstock Union, *vice* A. H. Marr, M.B., C.M., resigned.

CUTHBERT, H. P., has been appointed Medical Officer for the Clun District of the Clun Union, *vice* E. S. Lane, resigned.

DEAN, Thomas, M.D.St. And., M.R.C.S., has been re-appointed Medical Officer to the Burnley Union and Rural Sanitary Districts.

DEANS, William, M.B.Aber., C.M., has been appointed Medical Officer to the Edenfield District of the Haslingden Union.

FAULKNER, Herbert, L.R.C.P.Edin., and L.M., has been appointed Medical Officer to the 3rd District of the Tendring Union, *vice* T. Peat, deceased.

HARRIS, G., L.R.C.P., has been appointed Medical Officer of the Anstey District of the Barrow-on-Soar Union, *vice* T. S. S. Silles, L.K.Q.C.P.I., resigned.

HINGSTON, Andrew, M.R.C.S., L.S.A., has been re-appointed Medical Officer of Liskeard Union District.

HYNE, Frederick Alexander, M.R.C.S.Eng., L.S.A., has been appointed Medical Officer for the St. Justin Roxland District of Truro.

IDESON, Joseph James, L.S.A., has been re-appointed Medical Officer and Public Vaccinator for the Colne District of the Burnley Union.

KYNASTON, A. E., L.R.C.P.Edin., and L.M., M.R.C.S., L.S.A., has been appointed Medical Officer for the Osbournby District of the Sleaford Union, *vice* T. Blasson, M.R.C.S., resigned.

LAIRD, Thomas, M.B., Mast.Surgy.Glas., has been appointed Medical Officer to the Soothill Upper District of the Dewsbury Union, at a salary of £15 per annum.

LANGSTON, John James, L.S.A., has been appointed Medical Officer for the 3rd District of the Hollingbourne Union, *vice* J. S. Hutchinson, deceased.

LAWSON, Samuel, L.F.P.S., L.M.Glas., has been re-appointed Medical Officer to the Marsden District of the Burnley Union.

LEE, Barnard J., L.S.A., has been appointed Medical Officer for the Clay Cross District of the Chesterfield Union.

LLOYD, J. Hellings, L.R.C.P.Edin., M.R.C.S.Eng., has been re-appointed Medical Officer for the Kentisbeare District Tiverton Union.

MACMAHON, Edmond John Ryan, L.K.Q.C.P.Irel., L.R.C.S.I., L.M., has been appointed Medical Officer to the 4th District of the Northleach Union, *vice* A. W. Gabb, M.R.C.S., L.S.A., resigned.

MAGUIRE, J. H., L.K.Q.C.P.Irel., L.R.C.S.I., has been appointed Medical Officer for the Chesterton District of the Wolstanton and Burslem Union.

MCKAY, T. B., of Hallgate, has been appointed Medical Officer to the East District of the Doncaster Union, *vice* R. Storrs, deceased.

MCNAIR, George, L.R.C.P.Lond., M.R.C.S.Eng., has been appointed Medical Officer for the First Deddington District of Woodstock.

MOORE, Frederic H., L.K.Q.C.P.Irel., L.M., L.R.C.S.I., has been appointed Medical Officer of the Littleport District of the Ely Union, *vice* W. A. H. Barrett, L.R.C.P., L.S.A., resigned.

NEWMAN, Horace Townsend, A.B., M.B., M.D.Dub., L.R.C.S.I, Lic.Med.R.C.S.I., has been appointed Medical Officer and Public Vaccinator for the Audlem District of the Nantwich Union, at a salary of £30 per annum.

PHILLIPS, Easton Affiss, M.R.C.S.Eng., L.S.A., has been re-elected Medical Officer for the Durham District of the Retford Union.

REVELL, G. T., M.R.C.S.Eng., L.R.C.P.Edin., has been appointed Medical Officer to the Buckland Monocharum District of the Tavistock Union, at a salary of £40 per annum.

ROBINSON, Henry, L.R.C.P., L.R.C.S.Edin., L.M., has been re-appointed Medical Officer for the Hasland District of the Chesterfield Union.

ROGERS, G. Pigott, L.R.C.P.Edin., L.R.C.S., L.M., has been appointed Medical Officer to the Fourth District of the Greenwich Union.

RHODES, James, M.R.C.S., L.S.A., has been re-appointed Medical Officer to the Glossop Union and Rural Districts.

SAVILE, G. Townsend, M.D.St. And., L.R.C.P.Edin., M.R.C.S.Eng., L.S.A., has been re-appointed Medical Officer to the Clarborough District of the Retford Union.

SEQUEIRA, H. James, M.R.C.S.Eng., L.S.A., has been appointed Medical Officer of the Third District City of London Union.

SPOWART, William Ribton, L.K.Q.C.P.Irel. and L.M., L.R.C.S.I. and L.M., has been re-appointed Medical Officer for the Eighth District of the Norwich Union.

STACY, John Herbert, L.R.C.P.Edin. and L.M., L.R.C.S.Edin. and L.M., has been re-appointed Medical Officer for the Sixth District of the Norwich Union.

STUBBS, R. P., L.S.A., has been appointed Medical Officer for the Fylingdales District of the Whitby Union, *vice* E. H. Bowker, L.R.C.P., L.R.C.S.Edin., resigned.

WALTERS, Chas. Astley, M.R.C.S.Eng., L.S.A., has been re-appointed Medical Officer for the Second District of the Cheltenham Union.

WATSON, J. R., M.B.Edin., C.M., appointed Medical Officer and Public Vaccinator for the Harrogate District, Knaresborough Union, *vice* G. T. A. Atkinson, M.B.Edin. and C.M., resigned.

WELLBURN, Edgar Duesbury, L.R.C.P.Edin., L.R.C.S.Edin., L.M., L.F.P.S.Glas., has been appointed Medical Officer to the Sowerby District of the Halifax Union, *vice* J. S. Horsfall, deceased.

WHYTE, Andrew, M.D.Aberd., M.B., C.M., has been appointed Medical Officer of the Merthyr Cynog District of the Brecon Union, Vaccination Officer for the Merthyr Cynog and Brecknock Vaccination Districts.

WINDLEY, William, M.R.C.S.Eng., L.S.A., has been appointed Medical Officer for the South District of the Bingham Union, *vice* Henry Williams, L.R.C.P., M.R.C.S., resigned.

WOODHOUSE, William, M.R.C.S.Eng., L.S.A., has been re-appointed Medical Officer for the First District of the Norwich Union.

CERTIFICATED FACTORY SURGEON.

ELLIS, Hyacinth D'Arcy, L.R.C.P.Edin., M.R.C.S.Eng., has been appointed a certifying surgeon under the Factory Acts, *vice* George Ashmead, L.R.C.P., deceased.

PUBLIC VACCINATOR.

WILLIAMS, Augustus Frederick, L.F.P.S.G. and L.S.A.Lond., has been appointed Public Vaccinator to the No. 2 District of the Brixworth Union.

INSPECTORS OF NUISANCES.

ANSTEE, John, has been appointed Inspector of Nuisances, *vice* Joseph Anstee, deceased.

BROOKES, M., has been appointed Inspector of Nuisances to the Horsham Rural Sanitary District, *vice* J. B. Scrase, deceased.

HILL, Mr., has been appointed Inspector of Nuisances charged especially with the examination of fish, to the Plymouth County Council, at a salary of 24s. per week with uniform.

PINNIGER, Joseph, has been appointed Inspector of Nuisances, *vice* Mr. C. Snell.
SERGEANT, Mr., has been appointed Assistant Sanitary Inspector to the Newington Vestry.
SKELTON, C., has been appointed Inspector of Nuisances to the Ripley Local Board.
SUMNER, J. W., has been re-elected to the offices of Inspector of Nuisances, Canal-boats, and Common Lodging-Houses to the Driffield Rural Sanitary Authority, at a salary of £57 per annum.
WEBSTER, J. L., has been appointed Inspector of Nuisances to the Island of Portland Urban Sanitary Authority, *vice* J. A. Coomber, resigned.

PUBLIC ANALYST.

TEED, F. L., has been appointed Public Analyst for Camberwell.
WOODFORDE, W. T. G., has been appointed Analyst for the Borough of Newbury.

SURVEYORS.

ADSHEAD, Edward, has been appointed Borough Surveyor and Waterworks Engineer to the Macclesfield Town Council, at a salary of £200 a year.
DICKINSON, Mr., has been appointed Borough Surveyor for Berwick-on-Tweed.
HOOK, John, has been appointed Surveyor to the Hastings Highway Board, at a salary of £150 a year.
JOYNSON, Mr., has been appointed Surveyor to the Darlaston Local Board.
LUNN, Edward L., of Guildford, has been appointed Surveyor to the Hambledon Road Rural Sanitary Authority.

CLERKS.

ALLAN, James, has been appointed Assistant Clerk to the Guardians of St. Mary Abbott's, Kensington, *vice* D. H. Hose, resigned.
HOOPER, Frederick, has been appointed Clerk to the Surrey County Council, at a salary of £400 a year.
NEWMAN, James E., appointed Assistant Clerk to the St. Pancras Guardians.

RESIGNATIONS.

ATKINSON, George Thomas Andrew, M.B.Edin., and C.M., Medical Officer and Public Vaccinator of the Harrowgate District of Knaresborough.
CLARKE, William, M.D.Edin., L.R.C.S.Edin., Medical Officer of the Wentworth District of the Rotherham Union.
COOPER, Walter, L.R.C.P.Lond., M.R.C.S.Eng., Medical Officer for the 9th District of the Barnstaple Union.
CORKE, Cecil Alonysius F. F., P.S.Glasgow, L.R.C.P.Edin., L.S.A.Lond., Medical Officer for the Middle and Baschurch Districts of Ellesmere Union.
COVEY, George, M.R.C.S., L.S.A., Medical Officer of Health to the East Grinstead Urban Sanitary District.
JONES, John, Vaccination Officer of the Salford Union.
KAYE, J. R., M.B.Glasgow, and C.M., District Medical Officer of Birmingham.
MONK, Henry G. Hawkins, M.R.C.S.Eng., L.S.A., District Medical Officer and Public Vaccinator of the East District of the Bingham Union.
NEALON, J. A., B.A.Qu.Univ.Irel., M.D., Medical Officer to the Desford District of Market Bosworth.
NORMAN, John William, L.R.C.P.Edin., F.R.C.S.Edin., Medical Officer for the Wendron District of the Helston Union.
OVERSBY, W. T., Assistant Clerk to the Sheffield Guardians.
PENRICE, D. S., M.R.C.S.Eng., L.S.A., Medical Officer of the 4th District of the Norwich Union.
PHILLIPS, E. E., L.R.C.P.Edin., M.R.C.S.Eng., L.S.A., Medical Officer of Health to the Southend Local Board.
PRIESTLEY, Dr., Medical Officer for the Northern District of Whittlesey.
QUICK, John, M.R.C.S.Eng., and L.M., Medical Officer of the No. 1 District of Pensance.
SHIRLEY, Matthew Bernard, L.R.C.P.Edin., M.R.C.S.Eng., Medical Officer and Public Vaccinator to the Soothill District of the Dewsbury Union.
SMITHSON, G. W., Surveyor and Inspector of Nuisances to the Malton Board of Health.
SPENCER, E. M., M.D., L.R.C.P., L.R.C.S., Medical Officer of the Buckland District of Tavistock.
TANNER, H., L.R.C.P., M.R.C.S., Medical Officer and Public Vaccinator of the Audlem District of the Nantwich Union.
WHITE, Barrington Syer, M.R.C.S.Eng., and L.M., L.S.A., Medical Officer to the 7th District of the Tonbridge Union.

VACANCIES.

MEDICAL OFFICER OF HEALTH.—The office of Medical Officer of Health to the Sowerby Bridge Local Board of Health is rendered vacant by the death of Dr. J. S. Horsfall. Applications to be made to the Chairman of the Sanitary Committee, John Smith, Esq., not later than January 29. Salary £30 per year.
MEDICAL OFFICER OF HEALTH.—The Sanitary Committee of the Board of Works for the St. Saviour's District will meet on January 20 to receive applications for the appointment of Medical Officer of Health for the above district, subject to the approval of the Local Government Board, at a salary of £200 per annum. Applications to be accompanied by a copy of testimonials, not more than three in number, and marked outside "Application for appointment of Medical Officer." Canvassing strictly prohibited. Particulars of the duties may be had of W. H. Atkins, Esq., Clerk, Emerson Street, Bankside, Southwark, S.E.
DISTRICT MEDICAL OFFICER AND PUBLIC VACCINATOR.—The Guardians of the Parish of the United Parishes of Whittlesey invite applications from duly qualified medical practitioners for the above appointments. Salary, as District Medical Officer, £70 per annum, with the usual extra fees. Applications, with recent testimonials, endorsed "Application for Medical Officer," must reach the undersigned on or before Saturday, January 25. John Peed, Clerk, Whittlesey, near Peterborough.
PUBLIC ANALYST required for the St. Saviour's District. Salary £75 per annum. Applications to be endorsed "Application for appointment of Analyst." Appointment will be made on January 20. Particulars of the duties may be obtained of W. H. Atkins, Esq., Clerk, Offices, Emerson Street, Bankside, Southwark, S.E.
DISTRICT SURVEYOR.—The Chadlington (Oxford) Highway Board require a District Surveyor. Salary £150 per annum. Applications, with not more than three recent testimonials, to the office of the Clerk to the Board, Mr. A. C. Rawlinson, Chipping Norton, Oxon., by Monday, January 27.
ASSISTANT SURVEYOR.—The Frome Local Board requires an Assistant Surveyor; must have had experience in a Town Surveyor's office; preference given to one who has passed the examinations of the Sanitary Institute or Institute of Sanitary Engineers as Inspector of Nuisances. Applications to be delivered at the Clerk's Office not later than January 25.
SANITARY AND BUILDING BYE-LAW INSPECTOR.—The Corporation of Folkestone desire to receive applications for the above appointment. Candidates must be duly qualified to act as Sanitary Inspectors, and to possess a thorough knowledge of all branches of trade applicable to the construction of new streets, &c. Salary £150 per annum. Applications, marked "Sanitary Inspector," addressed to the Town Clerk, Folkestone, must be sent in not later than Saturday, January 18.
GAS ENGINEER AND MANAGER.—The Plymouth and Stonehouse Gas Light and Coke Co. require an Engineer and Manager. Salary £350 per annum to commence with. Applications, endorsed "Engineer and Manager," stating age, qualifications, and enclosing testimonials, to be sent to Mr. J. Thomas, Secretary, Gas Works, Plymouth, by January 21.
ENGINEER AND MANAGER.—An experienced Engineer and Manager required to take charge of the Gas Works at Middlesborough. He must have a thorough scientific and practical knowledge of the manufacture and distribution of gas, and the manufacture of sulphate of ammonia. Age 25 to 45. Applications, stating age, qualifications, and salary required, to be sent to Mr. G. Bainbridge, Town Clerk, Municipal Buildings, Middlesborough, not later than January 22, endorsed "Gas Manager."
GAS EXAMINER required for the St. Saviour's District. Salary £25 per annum. Appointment will be made on January 20. Applications to W. H. Atkins, Esq., Clerk, Offices, Emerson Street, Bankside, Southwark, S.E.
ENGINEER.—The Guardians of the Poor of the Parish of St. George's-in-the-East will, on Friday, January 17, receive applications for the appointment of Engineer for the Workhouse and Infirmary. Salary £2 5s. per week. Candidates must be thoroughly acquainted with steam, hot water, smiths', plumbers', and gas fitting works. Applications to be made 2 o'clock on January 17, to John Richard Browne, Esq., Clerk, Clerk's Offices, Princes Street, Old Gravel Lane, E.
ENGINEER.—The Guardians of St. George's-in-the-East, require an Engineer for the Workhouse and Infirmary. Salary 45s. per week. Applications to be made on forms obtainable at the office of Mr. J. R. Browne, Clerk, Princess Street, Old Gravel Lane, and to be sent in by January 17.
ENGINEER.—An Engineer is required for the St. James's Public Baths and Washhouses, Marshall Street, Golden Square, London, W. Salary £2 per week. Applications (on printed forms) to be made to the Clerk to the Commissioners, endorsed "Engineer," by January 22.
INSPECTOR OF NUISANCES.—The Vestry of the Parish of St. Marylebone are prepared to receive applications for the office of Inspector of Nuisances. Age not to exceed 40. Salary £2 5s. per week. Will be required to reside in the district. Applications (endorsed "Application Inspector of Nuisances") in the handwriting of the candidates, with copies of three testimonials only of recent date, to be forwarded to the Vestry Clerk at the Court House, Marylebone Road, Oxford Street, on or before Thursday, January 16 inst.
INSPECTORS OF NUISANCES.—The Poplar Board of Works require two Inspectors of Nuisances for the north portion of the district. Candidates must be between the ages of 25 and 45. Salary to commence at £130 per annum. Applications, accompanied by testimonials, endorsed "Appointment of Inspectors," to be sent to the clerk, Mr. Wm. Henry Farnfield, Board's Offices, 117, High Street, Poplar, by January 23.
INSPECTOR OF NUISANCES.—The Neath Rural Sanitary Authority require an Inspector of Nuisances for the Western Division of their district. Salary £1 1s. per week. Person appointed to devote the whole of his time to his duties, and to reside at Cadoxton. A knowledge of Welsh essential. Applica-

tions to be sent to Mr. H. Cuthbertsen, clerk, Neath, by January 27.

ASSISTANT SANITARY INSPECTOR.—The Poplar Board of Works require a temporary Assistant Inspector in the Sanitary Department. Wages 36s. per week. Applications to be made to Mr. W. H. Farnfield, Clerk, by January 23.

DEATHS.

ASHMEAD, George, L.R.C.P., L.R.C.S.Edin., and L.M., Medical Officer of Health to the Brierley Hill and Quarry Bank Urban Sanitary authorities; Medical Officer to the Kingswinford No. 4, and Public Vaccinator to No. 2 Districts of the Stourbridge Union; Certificated Factory Surgeon, &c.

BARNES, R., Inspector of Nuisances to the Haslingden Urban Sanitary District.

BARTON, Maurice Searle, M.R.C.S.Eng., L.S.A., Medical Officer of the 7th District of the Lincoln Union.

FISK, J. C., Clerk to the Woodbridge Guardians.

HERON, Sir Joseph, Town Clerk of Manchester.

ROSS, John Harris, M.D., C.M., M.R.C.S., Medical Officer for the Northern District of Brighton.

SHIRLEY, M. Bernard, L.R.C.P.Edin., M.R.C.S.Eng., Medical Officer and Public Vaccinator of the 10th District of the Dewsbury Union.

WESTON, A., Clerk to the Brackley Guardians.

CONTRACTS.

CENTRAL LONDON SCHOOL DISTRICT.

THE Board of Management invite Tenders for taking up certain Old Drains and laying down new, removing old and building new manholes and flushing tanks, removing W.C. pans, apparatus, and traps, providing external soil and ventilating pipes, and sundry other works, to the system of drainage at their School at Hanwell, Middlesex.

Drawings and form of contract may be seen, and copies of specification and form of tender obtained on application to Messrs. Henry Jarvis and Sons, Architects, at their office, 27, Trinity Square, S.E.

Sealed Tenders, endorsed "Tender for Drainage, &c." to be delivered to the undersigned not later than January 20.

G. E. EAST, Clerk.

10, Basinghall Street, London, E.C.

CONSTRUCTION OF SEWERS.

Tenders are invited for the laying of about 1,340 yards of Earthenware Pipe Sewers in Livesey Branch Road, together with the manholes, ventilators, and other appurtenant works for the Blackburn Highway Committee.

Plans, &c., may be seen, and bills of quantities and form of tender obtained at the office of Mr. J. B. McCallum, M.I.C.E., Borough and Water Engineer.

Sealed Tenders, endorsed "Tender for Livesey Branch Road Sewerage," addressed to the Borough Engineer, Municipal Offices, Blackburn, to be sent in by January 20.

The Abergavenny Rural Sanitary Authority invite Tenders for the providing and laying down of Cast-iron Pipes (about 900 yards) from the Town Commissioners' water main at Merthyr Road, near Llanfoist foundry, along the highway by the side of the L. & N.W.R., for the purpose of conveying water to the village of Llanfoist.

Plans and specifications may be seen at the offices of Mr. W. H. P. Scanlon, Clerk, Poor Law Offices, Abergavenny, and particulars may be obtained of Mr. Gill, Sanitary Inspector, Cherry Orchard, Abergavenny.

Tenders to be sent to the Clerk by January 23.

CONSTRUCTION OF RESERVOIR.

Tenders are invited for the construction of a Storage Reservoir upon the Netherton Burn, near Springfield, Carluke, together with a cast-iron pipe conduit, about 2¼ miles in length, &c., for the Police Commissioners.

Specifications may be obtained of Mr. James McCallum, C.E., Town Hall, Motherwell.

Sealed Tenders, endorsed "Tender for Waterworks," to be lodged with Mr. James Burns, Town Clerk, Motherwell, Scotland, by January 18.

UXBRIDGE LOCAL BOARD.

The Local Board invite Tenders for the construction, delivery, erection, and setting to work at the Board's Waterworks, Uxbridge, Gas Engine, Pumps, and Dowson's special compact plant, and the maintenance and keeping in repair thereof for a period of twelve months after such erection.

Particulars can be had, and the works seen, by applying to the Engineers, G. and W. L. Eves, 54, High Street, Uxbridge.

Sealed Tenders, endorsed "Gas Engine," to be delivered at the Clerk's office, 159, High Street, Uxbridge, not later than Monday, January 27.

SEWERAGE WORKS.

The Alton Local Board invite Tenders for constructing New Sewerage and Sub-soil Drainage Works.

Drawings and specifications may be seen, and bill of quantities and form of Tender obtained at the office of the Engineer, Mr. James Mansergh, 5, Victoria Street, London, S.W.

Sealed Tenders, endorsed "Tender for Sewerage Works," to be delivered at the office of Mr. Wm. Trimmer, Clerk, not later than Monday, January 20.

CONSTRUCTION OF RESERVOIR.

The Oswestry Rural Sanitary Authority invite Tenders for the construction of a reservoir at or near Trefonen, for the providing and laying down of pipes therefrom, and the providing and erecting of hydrants, fountains, and all necessary appliances for supplying the Trefonen district with water.

Plans and Specifications may be seen at the office of Mr. G. Owen, Oswestry.

Sealed Tenders, addressed "Tender for Trefonen Water Supply," to be sent to Mr. W. J. Bull, Clerk, Oswestry, by January 18.

CHESHUNT LOCAL BOARD.

The District of Cheshunt Local Board invite Tenders for the Sewering, &c., of Crescent Road, at Waltham Cross.

Plans, &c., may be seen and bills of quantities obtained at the office of the Surveyor, Mr. T. Bennett, A.I.C.E., Turner's Hill, Cheshunt.

Sealed Tenders, endorsed "Tender for Crescent Road," to be delivered at the offices of the Board by Wednesday, January 22.

LONG EATON WATERWORKS.

The Local Board of Health for the District of Long Eaton (Derbyshire) invite Tenders for the execution of works of Water Supply.

Drawings and specifications may be seen and form of Tender obtained at the office of Mr. George Hodson, M.I.C.E., Abbey Buildings, Westminster, S.W., or Baxter Gate, Loughborough.

Sealed Tenders, endorsed "Tender for Long Eaton Waterworks," to be sent to the undersigned not later than January 30.

Long Eaton, near Nottingham. F. DARWIN HUISH, Clerk.

NOTES AND QUERIES.

Having for some time back been in the receipt of Queries appertaining strictly to sanitary work, and which it would be easy to answer without having to refer our correspondents to competent professional advisers, we have opened a column in which to register such Queries and Replies thereto as can fairly be expected from us; and our subscribers and readers are invited to make such use of this column as will tend to benefit themselves and the community. Both Queries and Replies will, however, be subjected, if unnecessarily long, to a strict curtailment.

DAIRIES AND COWSHEDS.

Would you kindly inform me where I can obtain satisfactory information with reference to the sanitary condition of dairies and cowsheds as they should be? M. O. H.

[We are unable to refer our correspondent to any particular work in which this subject is dealt with alone, but it is indirectly discussed in various publications on cows and their diseases. The present law on the subject of dairies, cowsheds, and milk-shops is, however, fully set out in an article in the SANITARY AND MEDICAL RECORDS DIARY FOR 1888. Model regulations as to dairies and cowsheds are sold by Messrs. Knight & Co., 90, Fleet Street; Messrs. Shaw & Son, Fetter Lane; and Messrs. Hadden, Best & Co., West Harding Street, London, E.C.—ED.]

"PUBLIC BODY OR INSTITUTION."

(Section 4, sub-section 2, 52 & 53 Vict., c. 72.)

Would you kindly tell me through your SANITARY RECORD which of the following are considered public bodies or institutions under the Infectious Diseases Notification Act, 1889, entitling their medical officers to the one shilling and not the half-crown fee, as the Act is not clear in defining what they mean by a public body or institution:—Public hospitals or infirmaries, Poor Law Medical Officers, medical officers of Foresters' societies, medical officers of Oddfellows' societies, medical officers of Free Gardeners' societies, medical officers of Medical Aid societies, medical officers of any friendly society.

SANITAS.

[The Infectious Disease (Notification) Act contains no definition of the very vague expression "public body or institution," and we are not aware that the term has been directly defined by a Court of Law. Clearly a Poor Law Medical Officer is a "medical officer of a public body" within the meaning of the Act, and so are the medical officers of public hospitals or infirmaries which have been provided, probably by some local public body, or by the State, or are maintained for the public out of some special public fund. It should not be forgotten that hospitals "in which persons suffering from an infectious disease are received" are specially exempted from the operation of the Act by sect. 30. But it does not appear to us that any of the other societies mentioned by our correspondent could be classed as public institutions. It is not easy to draw a definite line between the two classes, but we believe that the Local Government Board hold that a local authority would not be justified in refusing to pay the higher fee to a medical man who claimed it in respect of a patient who was attended by him as a member of a society or club, when such membership entitled the patient to medical attendance.—ED.]

ORIGINAL PAPERS.

ON THE USE AND ABUSE OF DISINFECTANTS.*

By J. SPOTTISWOODE CAMERON, M.D., B.Sc.Edin., Medical Officer of Health, Leeds.

IN selecting for the title of this paper that of the "Use and Abuse of Disinfectants," I do not by any means propose to treat exhaustively the whole subject of disinfection; nor do I intend to discuss the vexed question as to which is the best disinfectant. These are very important matters indeed, but they are questions on which it will be desirable for you to consult with your own medical officers of health. At the same time, without going into any detail, I may give it as my general opinion that of all disinfectants heat is the most effectual; that, next to heat, perchloride of mercury, and after it carbolic acid rank high; while the vapours of chlorine and bromine are possibly of some service. What I propose, however, is to set before you what I look upon as the most efficient and economical use of disinfectants. I say economical, as I am strongly of opinion that a large amount of ratepayers' money is wasted in applying disinfectants in such a manner that they are of no earthly use. To pour, for instance, a few tablespoonsful of carbolic acid into a drain, with the idea of disinfecting the sewer, is to my mind a pure waste of material. Carbolic acid, as I have already hinted, is an efficient disinfectant, but its action is probably due to the property it has of limiting the activity and productive power of minute organisms, some of which we know are the cause of putrefaction, and others we believe essential factors in infection. It may also act, and probably it often does act, on organic matter in such a manner as to render it less prone to changes which would make it a cause or conveyer of infection.

It is not merely with one or two varieties of germs that we have to deal as causes of disease; like the evil spirits in the New Testament narrative, their name is "Legion." Different kinds of organic matter afford suitable soils for different kinds of these minute vegetables to grow upon, and the growth of a crop of one kind of bacterium in a certain given putrescible substance may limit, or entirely prevent, the development of a kindred germ—just as the fairy rings in the meadows are due to circles of fungi which have, by absorbing its needed nourishment, quite destroyed the growing grass. The spores of the commoner bacteria, such as the bacterium termo, are probably very widely, if not quite universally, distributed in the atmosphere near the ground, and the use of disinfectants, or as they are more properly called in this connection, antiseptics, in regard to these bacteria, is not to destroy all these germs, which would be practically impossible, even if it were desirable, but to prevent their action on a particular organic material, or to intercept and destroy them on their way to the material to be preserved. The preservation of tinned meat, for instance, proceeds on the assumption (1) that putrefactive bacteria are present in the meat, and (2) that they may be conveyed to it by the air. To prevent those in the meat from becoming active, heat is employed to destroy them; and to prevent those in the atmosphere from reaching the food, the tin is sealed while still hot.

Putrefactive bacteria, however, are not disease germs; they may even be looked upon as some of Nature's scavengers. But, like them, bacteria, which we absolutely know to be the cause of disease (such as, for instance, the bacterium called the bacillus anthracis), can be also destroyed in this way. We know that the bacillus anthracis is the cause of the disease known in the East as "malignant pustule," in Bradford as "wool-sorters' disease," and generally when it occurs in the lower animals, as "splenic fever." This is not a matter of conjecture or theory, but of absolute, logical, and scientific proof. We know also about this bacterium that the bacillus itself—that is to say, the full-grown bacterium—(which is a very giant amongst microbes, and which, when it attains its full stature, may even measure as much as $\frac{1}{5000}$ of an inch in length) is comparatively easily destroyed. It is the spore of the bacterium which it is most difficult to kill.* We do not *know* whether scarlet fever is due to the presence of a microbe in the patient, but we have many reasons to suppose that it is. We do know that a child may take scarlet fever from a slight exposure, direct, or even very indirect, to a previous case of that disease. And we know that the child so exposed, and having himself contracted the malady, is able to increase the quantity of poison to such an extent as to be capable of spreading the disease through a whole neighbourhood; and we have a right to infer (even although we are not yet certain which particular microbe is at fault) that there is in this disease a living cause of contagion capable of reproducing and multiplying itself within the human body to an immense extent. This opinion is not a new one; it has been held in some form or other for centuries. Sydenham, for instance, describes the disease as a fermentation of the blood; and although he did not know, as we now do, that the yeast fermentation is due to a small organism present in the ferment, and capable of multiplying itself in the body fermenting, yet the analogy of the process of scarlet fever to the process of fermentation did strike this careful observer. We know, as I have said, that ordinary fermentation is the result of the yeast plant acting on a favourable soil—to wit, grape sugar; and we know also that putrefactive processes are similar living processes, due to ferments of which the living plants are not the yeast plant but various bacteria, one of the commonest of which is our well-known friend and acquaintance, the bacterium termo.†

* A paper read before the annual meeting of the National Association of Sanitary Inspectors (Yorkshire Centre), held at Leeds, Jan. 18, 1890.

* Professor De Bary, of Strasbury, an authority in these matters, considers that amongst human diseases we are now pretty certain about the exact microbes which are the cause of anthrax, of relapsing fever, of tuberculosis, of gonorrhœa, and of Asiatic cholera. We know also something of the particular bacteria concerned in the infection of wounds, or pyæmia, as it was formerly called. There is one variety of erysipelas which has been definitely traced to a bacterium, one of the chain forming Streptococci. About Friedländer's micrococcus of pneumonia, as also about Lustgarten's bacillus of syphilis, there is still room for investigation; but the bacillus of leprosy has been definitely ascertained, as have also several bacteria causing diseases in the lower animals. The word bacterium, it may perhaps be well to state here, is used for the whole tribe of these minute organisms. A bacillus, a spirillum, or a streptococcus is still a bacterium, and the particular germ is distinguished by the second or specific name as Bacillus anthracis, Streptococcus albus, or Spirochæte Obermeyeri. Classification of these growths is still in its infancy. In the estimate of the size of an anthrax bacillus, given above, a single bacterium is meant, not a thread made up of hundreds of bacilli joined together, end to end, and large enough to be seen by the naked eye.

† The word zymotic applied by Liebig to a class of diseases was intended to imply that they were due to the presence of a ferment (ζύμη). There are also ferments that cannot be called "germs," such as diastase, pepsine. Such ferments are not, however, reproductive.

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We know that carbolic acid will, if present in a sufficient quantity, prevent the development of the putrefactive bacteria in an organic fluid, and we infer that the microbes of infective diseases will have their activities also lessened by the presence of this chemical. But the carbolic acid, to be effectual, must be present in such a quantity as to cause death to these germs. It must also be present in such a condition that it can reach them. A bottle filled with carbolic acid, and well corked, placed in a cesspool, would have no effect whatever as a disinfectant; the impervious glass of the bottle, and the more or less efficient cork, would prevent the contact of the chemical and the microbes. But it does not always occur to us that a strong corrosive like carbolic acid, brought into contact with an albuminous body, will coagulate the parts with which it comes in contact, and thus seal itself up, as it were, in a bottle of its own. And in the same way, a portion of albuminous material, placed in strong carbolic acid, would have its outer surface coagulated—rendered hard and more or less impervious—so that the inner parts of the albuminous material might be entirely protected from the action of the disinfectant.

Now, if the poison, say of typhoid fever, be contained in a semi-albuminous motion, and strong carbolic acid be poured into the vessel containing the same, is it not extremely likely that some of the disease germs in the motion will be protected from the action of the acid by the coating of hardened material formed outside them—by the very disinfectant which is intended to destroy them? And yet I have frequently seen nurses in attendance upon patients with this disease who have considered that by pouring strong carbolic acid over the motions of the patient they were disinfecting these evacuations.

Now it seems to me that this mode of using carbolic acid is little better than sheer waste. What should be done is (1) to use the carbolic acid sufficiently diluted to enable it to penetrate the semi-albuminous constituents on to which it is poured, without so rapidly coagulating them as to protect the poison germs they contain; then (2) the motion itself should be sub-divided in order to bring as much of it as possible under the action of the disinfectant. This must, of course, be done beneath the surface of the disinfecting solution, which may need to be increased in quantity for the purpose.

But a further mistake is frequently made by the attendant in dealing with the motions of a patient suffering from the disease named. I have known the contents of the bed-pan, after having a small quantity of strong carbolic acid, say a tablespoonful, poured over them in the manner just described, at once transferred to the pan of the water-closet. What naturally happens then is that the carbolic acid is washed away from the motion with which it had been in contact—a tablespoonful of it being thus diluted with perhaps two gallons of water. That is to say, it is reduced to the strength of 1 part in 640; when, it is needless to add, even if it remained in contact with the disease germs, it would have little or no effect in destroying them. But the carbolic acid being liquid is probably carried away more rapidly than the more solid parts of the motion, it then becomes still further diluted in the drain, and leaves the germs to work their wicked will.

I am accustomed, therefore, to advise that a solution of carbolic acid of about 5 per cent. in strength be previously prepared. This may be conveniently done by taking 8 oz. of crude carbolic acid, placing it in a jar provided with a lid, and which will hold one gallon, and then pouring about a pint of boiling water upon the acid, shaking the mixture well, and afterwards diluting it with cold or tepid water to the extent of one gallon. This solution, which contains 5 per cent. of the crude, or about 4 per cent. of pure carbolic acid,* should be kept covered, and used as occasion requires. About a pint of it should be placed in the bed-pan, the patient's hips having been previously anointed with a little oil, and the motion should be received into the solution of disinfectant. By this means the risk to the nurse of contracting the disease from her patient is very much lessened; for the motion, as soon as it quits the patient, enters the disinfecting fluid, where for the time being it can do no further harm. It should not, however, be immediately transferred to the water-closet, but should be first broken down small, and then set aside in a covered vessel, with the disinfectant about it, to give the latter time to destroy the germs it contains. Three hours is probably sufficient for this purpose, if the carbolic acid has not been further diluted by liquid accompanying the motion. If there has been much liquid it is desirable to add a further quantity of carbolic acid solution, made for this purpose double the strength of that already described. A further difficulty, however, arises, especially in crowded neighbourhoods, and in the homes of the poorer classes, in finding a place in which to set aside the vessel containing the motion for that length of time. Where the pail system of excrement disposal is adopted, I have been accustomed to send a special pail, with an iron air-tight spring lid (Kirk and Foster's patent); into this the motions can be transferred if necessary at once, but where practicable, even with these arrangements, I prefer that they should remain the three hours in the first vessel before being transferred to the pail. In either case the pail should be about one-third filled with a solution of carbolic acid, of not less than 5 per cent. in strength, and the lid should be fastened down securely each time the pail is used. If this is done the pail may be quite safely put in any open place, care being, of course, taken that there shall be no spilling of the contents of the vessel in transferring them to the pail. According to circumstances such pail may be left for a longer or shorter time, say a week, until it is about half full; it should be then transferred to the sanitary yard, there filled to within a few inches of the top with carbolic acid solution and allowed to stand, still covered by its lid, for a week longer before anything further is done with its contents. If the lid be one of the kind named, and there is any doubt as to whether the breaking up of the fæcal matters has been carried out as directed, the pail and its contents may be thoroughly shaken up in the sanitary yard.

Where trough-closets are in use, and the patient is too ill to be removed to the fever hospital, it would perhaps be better that the official, whose duty it is to cleanse the trough, should charge it daily with such a quantity of carbolic acid as would bring up the contents of the trough itself to a strength of about 5 per cent.

In thus describing the principles of the method I have advised in Huddersfield, and am now endeavour-

* The strength of the crude carbolic acid used should be ascertained by analysis, and should be about 90 per cent. Should it contain so little as 38 per cent. of pure acid, as do some specimens sold, the proportion used to make the solution must, of course, be increased accordingly.

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ing to get carried out in Leeds, I would not be understood as precluding the use of any other disinfectant than carbolic acid. I feel, however, so much confidence in the use of this well-known disinfectant that I hesitate considerably about recommending others whose powers and potency are less known. This objection does not apply to the use of perchloride of mercury, the best of all our soluble disinfectants; but there are certain difficulties about the use of this powerful poison which make one hesitate to put it into the hands of any but the sanitary inspectors themselves. It might so easily be used for criminal purposes, and has moreover an inconvenient action upon metals, so that in the meantime I feel shy about recommending its general adoption; carbolic acid is also a powerful poison, but owing to its strong smell and burning taste it is not so likely to be used for criminal purposes. That accidents have happened from its use I am of course aware, but they are accidents of negligence which should never have occurred. It is necessary, however, in supplying carbolic acid to the public, to impress the individual receiving it strongly with the dangers attendant on its use, and it is, of course, absolutely necessary to distribute it in bottles which are conspicuous by their shape and label. Cases of poisoning, I am told, have occurred in Leeds from its careless use; I am not aware that any case arose in Huddersfield to persons supplied with the disinfectant by the Corporation, though for years back it has been distributed freely where cases of infectious disease were known to exist.

I have dwelt thus rather minutely upon the method I favour of using disinfectants in typhoid fever, because I consider that it is better to exemplify one's meaning by somewhat fully describing the method to be adopted in a particular case, rather than to weary you with minute details as to the means to be taken in each disease. I am speaking to men accustomed daily to handle disinfectants, and to deal with infectious disease; I do not, therefore, consider it necessary to go too far into detail. You will gather from what I have just said that I regard disinfectants placed under the bed of a patient as wilful waste. The amount of carbolic acid vapour given off from a saucer under the bed, if sufficient to do any disinfection at all, would probably be detrimental to the health of the patient. The same would be true of the chlorine evolved from chloride of lime, still more so of the vapour of bromine. Sulphur dioxide (fumes of burning sulphur), unless used for medicinal purposes, and under the direction of the medical attendant, is also quite out of the question in the sick room. If strong enough to destroy germ life, it would be strong enough to destroy human life.

Condy's Fluid placed in a saucer or plate, or in a shallow dish, in a room, probably acts simply as so much water would, by absorbing gaseous elements evolved from the sick person; at the same time it oxidizes them, and has no deleterious effect upon the patient. The amount of good it can possibly do is, however, I should think, infinitesimal, and could be obtained far more certainly by the simple process of opening the window for a few minutes every hour.

It must not, however, be forgotten that even in the disease which I have chosen as typical, viz. typhoid fever, the poison may have been communicated by the patient to his immediate surroundings. The bed linen, for instance, may have been stained, the bed itself may have been saturated with discharges; carpets and bed hangings may have become defiled, and excrementitious matters may have been allowed to cake on disused utensils. I emphasize these possibilities somewhat, because one so often hears the remark, pregnant with mischief, that typhoid fever is not infectious. The possibilities of infection, however, are probably very much greater than is generally supposed. There may be no great risk, there is probably none, in sitting down by the bed side of a carefully nursed patient suffering from this disease, in an airy sick-room, or in the well ventilated ward of a properly constructed hospital. But the case is altogether otherwise where an untrained nurse has allowed the sheets, and possibly the blankets of the patient, to become soiled, and where the fever poison has been "cultivated" in the warm bed, and diffused therefrom throughout the atmosphere of the apartment. It is better, therefore, that linen which has been stained should be immersed in a solution of carbolic acid, prepared in the manner already described. The bed, if much stained, should be destroyed. If the soiling is only slight, the tick may be taken off, and after being steeped in carbolic acid solution, may be washed and boiled; the flocks or feathers which have been infected should be destroyed, and the rest passed through a steam disinfector. It must be remembered that although the typhoid poison of the soiled bed might be destroyed, the filth with which it was surrounded would still remain filth. The bed which has been much stained with discharges is not necessarily fit for use because it has been passed through a disinfecting stove.

Disinfection is intended to destroy the particular germ present at the time, but it does not necessarily entirely destroy the organic matter in which, and on which, the germ lived, and it would not prevent ordinary putrefaction from being in time set up in that organic matter under favourable circumstances. The position, in fact, of disinfection in regard to the germs of disease is, that a very intense heat destroys all germs subjected to its action, but does not absolutely destroy the filth in which they lived. Boiling would arrest decomposition in a leg of mutton, but it would not prevent putrefaction from being afterwards set up. Carbolic acid destroys most germs with which it is brought into sufficiently intimate contact, it is, however, volatile, and in time will evaporate, leaving the dead or half-killed germs, as the case may be, behind it; if only half killed, the special poison may again reassert itself; but even if completely destroyed, carbolic acid will leave the organic matter in such a condition that it may still undergo putrefactive changes when the disinfectant has entirely escaped. Perchloride of mercury, if present in a sufficient quantity, not only destroys the germs, but, not being volatile, it remains, unless washed away, in the substance disinfected, and it will probably for ever prevent other germ life, whether the germs be those of disease or putrefaction, from being set up in the material subjected to its action.

Bed hangings, carpets, and such like, which have been infected, should therefore, if possible, be first disinfected and then washed; care being taken that the washing water is itself disinfected before being sent down the drains.

This introduces a subject about which I feel a certain amount of doubt. Provided that the bed linen of the patient has been steeped for twenty-four hours in a 5 per cent. solution of carbolic acid, it might probably then be washed in the ordinary manner without incurring any particular risk, but would it be a wise thing for a laundress to take say a

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nightdress so stained, and at once proceed to wash it with carbolic soap. In so doing she would probably use a strong soap, containing, it would be supposed, 20 per cent. of carbolic acid, and one which at one time, perhaps, really contained that amount. This soap she would, at no small risk to herself from handling the undisinfected articles, rub thoroughly into the stained portions of the clothes, she would then set them aside in the peggy tub to steep, and afterwards subject them to the ordinary process of washing. Now it seems to me that this is the more dangerous method of the two. If the linen is simply put into a 5 per cent. solution, it need not be touched for twenty-four hours, and if the vessel in which it has been steeped has been covered, it is probably then safe to wash it in the ordinary way. But the soap process, I think, trusts too much to chance. In the first place, the soap, if it has been kept for some time, does not probably contain anything like 20 per cent. of carbolic acid, much of the original disinfectant having evaporated. In the second place, the soap is only applied, or is chiefly applied, to the parts supposed to be infected. That is a matter of selection on the part of the laundress, who may be careful or the reverse. In the third place, the soaped articles are steeped, and the strength of carbolic acid remaining in contact with them after, or during that process, is probably very much less than the 5 per cent. insisted upon for the other. We are dealing, as it appears to me, with unknown quantities, with possibilities, instead of known quantities and certainties. I therefore hesitate to recommend this method of disinfecting linen. In any case, the linen, when it has been cleansed, should be boiled, and the water in which it has been washed, if the disinfection has not preceded the washing, should itself be disinfected before being thrown away. I should prefer that this disinfection should be also by boiling, a matter easily carried out in a laundry provided with steam.

Dealing not long since with an outbreak of small-pox in a temporary hospital, I obtained permission also to fit up a temporary laundry, with two tanks, both provided with taps and drains. The drains, however, to these tanks were kept under lock and key, the key being in the charge of the matron of the hospital. The small-pox clothes were placed in one tank, and steeped in plain water for twenty-four hours. They were then transferred to the second tank, where they were steeped in a solution of perchloride of mercury, 1 part per 1,000, for twenty-four hours longer; the water in the first tank, after the clothes had been removed from it, was mixed with a strong solution of perchloride of mercury, so as to bring up the strength of the whole of the contents of the tank to 1 part per 1,000 of the salt. The first tank was allowed to stand with this solution in it for twenty-four hours, and then both tanks were emptied, and the clothes washed in the usual manner. The object of this process was first of all to take any stain out of the linen, and not to fix it by the disinfectant; second, to make sure that disinfection was complete, by immersing the linen in a strong solution in the second tank; third, to insure that no undisinfected material should enter the town drains. All who had to deal with the undisinfected linen were, of course, vaccinated.

I have no time to speak of two important processes accessory to true disinfection. I mean (1) the oxidation of infected material by the air and by chemical oxygenizing agents, and (2) cleansing and the removal of infective and infected materials by flushing and scouring. Perhaps at some future time I may be allowed to return to this subject.

To sum up briefly, I should advise you (1) to use a disinfectant only where you have some reasonable ground to believe that with it you will reach the germs of disease to be disinfected; (2) so to use your disinfectant that it shall kill, not scotch, the snake. For this purpose, wherever it is practicable, remove the articles to be disinfected, and subject them to a heat of 220° (Fahr.) in an apparatus for the purpose. Do not be content with an outside temperature of this amount, but be certain that the exposure to heat has been for such a length of time, and under such efficient conditions, that the heat shall have penetrated to the centre of the largest of the articles so treated. Remember (3) that disinfection and cleansing are two processes, and that both are necessary; and, lastly, when in doubt, apply to your medical officer of health, and follow his advice.

"INFLUENZA," AND ITS SUPPOSED CONNECTION WITH DENGUE FEVER.

By Richard Domenichetti, M.D., Deputy Inspector General, H.P., and Medical Officer of Health, Louth Combined Districts.

Various authorities have, in the course of the present epidemic of influenza, attempted to prove its identity with the dengue fever of the West Indies and the Spanish Peninsula. I shall endeavour to elucidate this question by reference to notes in my possession, containing a full account of the symptoms observed during an epidemic of that fever at Gibraltar in 1867.

Before doing so, I shall offer a few observations on influenza as it occurred in this part of Lincolnshire, and as my sphere of observation occupies a large area, embracing 90 parishes, I have had ample opportunities of acquainting myself with the characteristics of the disease in this district.

The opinion appears to be universal that this epidemic has not visited these islands since 1847, and its features have shown much diversity. As far as my experience is concerned, three distinct types have prevailed since it appeared in the middle of November last. The most common form has been that of an ordinary cold, or "coryza," with a tendency to lung complications, but, in the greater number of cases, the subjects of it were not laid up for more than a few days, and, amongst the farm labourers, the men were not incapacitated from work for more than three days; at the same time, in almost every village, there were two or three cases with bronchial complications laid up for long periods.

Scarcely a parish escaped a visitation of this character, and not a few deaths have been registered from affections of the lungs, consequent upon cold, but only in one instance has a death been directly referred to influenza, and the subject of it was a man aged 86. But few cases of the typical form presented themselves to my notice, where the symptoms were characterized by sudden seizure, pain in the head, and especially the eye-balls, rheumatic pains in the back and lower extremities, rapid pulse and high temperature during the first three days. Indeed, the temperature, amounting sometimes to 105°, suggested the probability of typhoid fever having supervened; but the next day the pulse and temperature fell to a

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condition almost normal, leaving the patient very weak. There was always a tendency in these severe cases to lung complications, which, of course, retarded recovery.

The third variety, though seldom met with, was marked by colic and diarrhœa, in severe cases almost amounting to dysentery.

I could not satisfy myself that there was anything peculiar in the condition and surroundings of this class of cases. My district is partly situated on the low lands abutting on the seashore, and intersected by large dikes, so that the soil, which is a strong clay, is well drained, although it is designated locally as the "Marsh." The other portion, situated on the "Wolds," a low range of hills, is distinguished by the soil being of a less tenacious character, overlying the chalk formation, in some places only one or two feet in depth. I did not observe there was any difference, as regards the prevalence of influenza, between the two districts. It will not now be in my province to give an exhaustive account of the influences which may be supposed to have operated in causing this epidemic, which would manifestly be beyond the scope of the present article. I have merely recorded the symptoms of the disease as met with under my own observation. Doubtless data will soon be forthcoming which will enable specialists to throw some light on the subject. At present our speculations must necessarily be vague and uncertain.

I should not omit to note that the duration of the influenza epidemic has been about six weeks, and wherever cases were attributed to infection, the period of incubation was noticed to be from two to four days.

I shall now review the symptoms observed during the epidemic of dengue fever in 1867, at Gibraltar, and as they have been recorded in a report which I made to the Governor (the late Lord Airey) when acting as principal medical officer at that place, embodying the observations of the entire medical staff, civil and military, it may be studied with advantage at the present juncture, no appeal to memory being involved, as the facts were recorded by myself in a copy of the report in my possession. The civil surgeon, Dr. Stokes, also reported at length on the epidemic, and his evidence is valuable, inasmuch as he testifies to the fact that four-fifths of the civil community on the rock were attacked by the epidemic, 12,000 in all.

Dengue fever was first noticed in Gibraltar in September 1867, and was introduced from the West Indies to Cadiz, whence it spread to Gibraltar. By the natives it was called Trancazo, or "knock-me-down" fever, from its sudden seizure, accompanied with pains in the limbs, headache, and pains in the eyeballs, foul tongue, and occasionally vomiting and diarrhœa, and on the subsidence of the febrile symptoms a rash resembling "measles," covering the body, and especially on the arms and backs of the hands, not unfrequently made its appearance. When the rash appeared, the patient generally expressed himself quite well. The duration of the attack was generally four or five days, when not complicated with diarrhœa, which lasted for a few days. Dr. Stokes, late Civil Surgeon of Gibraltar, notes in his report to me that women were more subject to the disease than men, and children less so than either. At that time it was considered to have a close affinity to the form of "scarlatina rheumatica," described by Dr. Copland in his medical dictionary. He further states that the dengue epidemic commenced about September 10, and prevailed until November 10. He considered it decidedly infectious, but only two deaths were reported, and the tenor of his report agrees with my own, so that I need not quote further from it, except to add that Dr. Stokes himself suffered from the malady, and related his own symptoms in the form of an appendix.

It now remains for me to point out the close resemblance existing between the dengue fever, as above described, and the present influenza epidemic. The symptoms are almost identical, whether as regards mode of seizure and other phenomena; and as for the appearance of rash, which has not been noticed during the present epidemic, except in a few instances, the deviation may be accounted for by the difference of climate. The period of incubation, about four days, is the same, and, what is more strange is, that both epidemics appear to have been of the same duration, viz. about six weeks or two months.

Without professing to arrive at a definite conclusion as to the identity of the two epidemics, I think it will be conceded that I have adduced strong evidence in its favour, and I shall be glad if these observations give rise to any criticisms, especially if they throw any further light on this interesting subject.

NEWQUAY AS A HEALTH RESORT.

By James Nicholls, M.D., F.R.C.S.

Newquay, a rising town, is romantically situated on the north coast of Cornwall, in full view of the Atlantic, and is surrounded by charming and unique coast scenery. It abounds in curious and remarkable cliff caverns, sheltered beaches, and picturesque coves, its bold headland forming a striking and characteristic feature.

The town has a thorough and efficient system of drainage, and the water supply is of the best. Newquay stands upon slate, and is, therefore, admirably suited to persons suffering from rheumatism.

The Atlantic breezes, although at times somewhat boisterous, yet tempered as they are by the warmth of the Gulf Stream, and laden with ozone, are not, as some people imagine, *cold*, but bring renewed health to the convalescent, and colour to the cheeks of the invalid. In confirmation of this, we need only refer to the parish register or the curiously-carved tombstones in the old churchyard for conclusive evidence of the longevity of the inhabitants; indeed, the old Cornish axiom, that "people here never die, but either shrivel up or are drowned," appears almost to be verified with regard to Newquaytonians.

Although each succeeding summer brings a large number of increasing visitors to Newquay, its advantages as a winter resort are not yet sufficiently manifest to the public; its mean temperature is but a degree or two above Scilly, with the advantage of getting more bracing air than that favoured spot.

A great desideratum (public baths) will shortly be established in Newquay by a limited company, where the invalid may have warm or medicated baths in winter as in summer. A convalescent cottage home will also be provided.

The hotel accommodation is good, and it is proposed to erect a large hotel on the headland already referred to. There are between 200 and 300 lodging-houses of various grades, and the number is increasing.

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The parish church is a fine old edifice, with a grand mediæval tower, and is supplemented by a chapel of ease in Newquay proper; the Noncomformist churches of different denominations are supplied with ministers of intelligence and culture.

There is an excellent train service (Great Western Railway), especially in the summer, the journey to London being accomplished in about ten hours. There is also the advantage of postal delivery three times daily. A peculiarity of this service is, that women (to use an Hibernianism) are *postmen* in Newquay, and as "these harbingers of love and death" trot smartly along with their bags of letters, they are a source of amusement to the visitor who sees them for the first time. But a few years since a solitary butcher occasionally visited Newquay, and was at that time the only supply for its inhabitants, who had, in case of illness, to send eight miles for a doctor. This state of things now is all changed; the tradesmen are thriving, and Newquay, past and present, has doubtless to look forward to a bright future.

THE REGISTRAR-GENERAL'S LAST QUARTERLY RETURN.

By J. Hampden Shoveller.

The quarterly return of births, marriages, and deaths in England and Wales has just been issued by the Registrar-General. The statistics relating to marriages are for the third quarter of last year, and those relating to births and deaths are for the three months ending December last. The marriage-rate showed a slight excess, while the birth-rate and the death-rate were considerably below their respective averages. The mean temperature of the air at the Royal Observatory, Greenwich, was 43°·5, and was slightly below the average for the corresponding quarters of 118 years. The rainfall at Greenwich amounted to 6·15 inches, which was nearly an inch below the average for the corresponding periods of 74 years. Rain was measured on 39 of the 92 days in the quarter.

During the third quarter of last year the marriages of 107,542 persons were registered in England and Wales, equal to an annual rate of 14·7 per 1,000 of the population. The marriage-rate showed an increase of 0·4 upon that recorded in the corresponding quarter of 1888, and slightly exceeded the mean rate in the third quarters of the ten years 1879–88. The lowest county marriage-rates were recorded in Hertfordshire, Shropshire, Suffolk, and Westmoreland; the highest in the West Riding of Yorkshire, Lancashire, Northumberland, and Monmouthshire.

The 216,838 births registered in England and Wales during the three months ending December last corresponded to an annual rate of 29·6 per 1,000 of the population, estimated by the Registrar-General to be rather more than twenty-nine millions of persons. This rate showed a further decline from those recorded in recent corresponding quarters, and was 2·4 per 1,000 below the mean rate in the fourth quarters of the ten years, 1879–88; it was, indeed, lower than that recorded in the corresponding period of any year since 1847, when the registration of births was still defective. In the several counties the birth-rates in the quarter ranged from 22·7 in Rutlandshire, 24·7 in Sussex, 25·5 in Herefordshire, and 25·7 in Shropshire, to 32·6 in Durham, 33·1 in Staffordshire, 33·9 in Essex, and 36·0 in Monmouthshire. The 216,838 births registered in England and Wales last quarter exceeded the deaths by 85,140; this represents the *natural* increase of the population. It appears from returns issued by the Board of Trade that 59,876 emigrants embarked during last quarter from the various ports of the United Kingdom at which emigration officers are stationed; excluding foreigners, and distributing proportionally those whose nationality was not distinguished, the emigrants of British origin were 46,778, including 35,447 English, 4,031 Scotch, and 7,300 Irish. The proportion of emigrants last quarter to a million of the respective populations of the three divisions of the United Kingdom were 1,222 from England, 989 from Scotland, and 1,548 from Ireland; compared with the corresponding quarters of 1887 and 1888, the proportion of emigration showed a further decline in each of the divisions of the United Kingdom.

From returns published by the Local Government Board it appears that the average number of paupers relieved on the last day of each week during the quarter ending December last was 697,106, of whom 184,399 received in-door, and 512,707 out-door relief. The proportion of the population in receipt of pauper relief was 24·0 per 1,000, and showed a further decline from that recorded in recent corresponding quarters.

The deaths of 131,698 persons were registered in England and Wales during the three months ending December last, equal to an annual rate of 18·0 per 1,000 of the estimated population. This death-rate exceeded by 0·2 per 1,000 the unprecedentedly low rate in the corresponding quarter of 1888, but was 1·2 below the mean rate in the fourth quarters of the ten years, 1879–88. In the various counties the death-rates last quarter ranged from 13·9 in Dorsetshire and Berkshire, and 14·3 in Sussex, in Huntingdonshire, and in Surrey (extra metropolitan), to 20·6 in the West Riding of Yorkshire, 20·7 in Northumberland, 20·9 in Lancashire, and 21·8 in Monmouthshire. In the principal urban districts, comprising the chief towns and containing an estimated population of more than eighteen and a half millions of persons, the rate of mortality last quarter was equal to 18·9 per 1,000; in the remaining and chiefly rural population of more than ten and a quarter millions of persons, the rate was 16·4. The urban rate was 1·2 and the rural rate 0·5 per 1,000 below the mean rates in the fourth quarters of the eight years 1881–88. In equal numbers living the deaths were 115 in the urban to 100 in the rural population, the mean proportion in the eight preceding corresponding quarters having been 119.

In the twenty-eight large English towns, including London, and having an estimated population of nine and a half millions of persons, the deaths registered during the quarter under notice corresponded to an annual rate of 19·4 per 1,000, which exceeded by 0·5 the general urban rate, but was as much as 1·6 per 1,000 below the mean rate in those towns in the corresponding periods of the seven preceding years, 1882–88. While the death-rate in London last quarter did not exceed 17·8 per 1,000, it averaged 20·7 in the twenty-seven provincial towns, among which it ranged from 15·7 in Birkenhead, 15·9 in Brighton, and 16·2 in Leicester and in Nottingham, to 25·8 in Newcastle-upon-Tyne, 26·0 in Manchester, 26·5 in Preston, and 28·7 in Plymouth. The rates of mortality at different ages in the twenty-eight large towns showed the usual wide variations, owing in great measure to the differences in the age and sex distribution of the

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Analysis of the Vital and Mortal Statistics of the Twenty-eight Great Towns, dealt with in the Registrar-General's Weekly Returns, for the Fourth Quarter of 1889.

Towns.	Estimated Population middle of 1889.	Births.	Deaths.	Annual Rate per 1,000 Living. Births.	Deaths.	Principal Zymotic Diseases.	Deaths from Principal Zymotic Diseases.	Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Whooping-cough.	Fever.	Diarrhœa.	Deaths of Infants under one year of age to 1,000 Births.	Rate per cent. of Uncertified Deaths.
28 Towns	9,555,406	71,486	46,204	30·0	19·4	2·0	4,796	2	799	928	700	969	643	755	155	2·1
27 Towns	5,203,668	39,659	26,884	30·6	20·7	2·2	2,833	1	476	666	252	513	424	501	169	3·0
London	4,351,738	31,827	19,320	29·4	17·8	1·8	1,963	1	323	262	448	456	219	254	137	0·9
Brighton	121,807	731	484	24·1	15·9	1·1	32	—	5	5	1	6	6	9	141	3·3
Portsmouth	141,253	1,179	636	33·5	18·1	1·9	66	—	—	6	10	28	13	9	137	0·9
Norwich	94,510	780	398	33·1	16·9	1·4	34	—	8	1	7	2	8	8	146	1·8
Plymouth	78,225	596	559	30·6	28·7	7·2	141	—	2	104	16	5	8	6	174	0·7
Bristol	229,361	1,626	998	28·5	17·5	1·7	99	—	4	10	6	57	5	17	154	2·1
Wolverhampton	82,544	655	450	31·8	21·9	2·7	56	—	8	4	3	24	4	13	197	2·4
Birmingham	454,835	3,338	2,050	29·5	18·1	1·8	203	—	61	68	8	21	7	38	155	2·6
Leicester	150,520	1,186	607	31·6	16·2	0·7	26	—	—	3	2	3	9	9	174	2·8
Nottingham	237,812	1,534	961	25·9	16·2	1·8	108	—	50	12	1	9	18	18	175	1·1
Derby	98,529	700	416	28·5	16·9	1·2	30	—	2	3	9	2	5	9	174	1·7
Birkenhead	102,541	803	401	31·4	15·7	1·6	40	—	2	5	4	7	14	8	139	1·2
Liverpool	606,562	4,278	3,314	28·3	21·9	2·7	403	1	62	135	38	71	65	51	177	6·3
Bolton	114,670	896	630	31·4	22·1	3·1	88	—	6	26	7	23	12	14	152	1·4
Manchester	378,800	3,217	2,450	34·1	26·0	2·3	214	—	13	47	38	28	38	50	169	2·1
Salford	234,283	1,677	1,092	28·7	18·7	3·4	196	—	12	48	55	16	23	42	150	2·7
Oldham	142,405	953	698	26·9	19·7	1·5	54	—	5	10	4	19	6	10	185	4·2
Blackburn	121,275	928	731	30·7	24·2	2·3	68	—	13	25	1	9	6	14	194	2·6
Preston	104,194	910	687	35·1	26·5	3·2	83	—	22	7	5	10	16	23	240	3·2
Huddersfield	92,825	604	453	26·1	19·6	0·6	13	—	1	2	3	2	1	4	174	7·7
Halifax	81,080	560	460	27·7	22·8	1·1	23	—	3	3	3	2	8	4	159	4·8
Bradford	235,056	1,499	1,248	25·6	21·3	2·2	128	—	51	14	2	21	24	16	191	2·2
Leeds	357,449	2,873	2,000	32·3	22·5	2·1	187	—	4	34	6	57	54	32	166	1·8
Sheffield	327,227	2,708	1,672	33·2	20·5	1·8	148	—	6	61	18	17	19	27	165	4·4
Hull	208,017	1,644	1,146	31·7	22·1	1·9	101	—	5	4	5	44	21	22	197	4·5
Sunderland	134,193	1,154	840	34·5	25·1	4·5	152	—	101	12	6	6	14	13	188	1·3
Newcastle-on-Tyne	160,983	1,536	1,036	38·3	25·8	2·7	108	—	28	9	10	24	11	26	173	2·0
Cardiff	112,712	1,094	467	39·0	16·6	1·1	32	—	2	8	4	—	9	9	131	1·3

population. The death-rate among infants, measured by the proportion of deaths under one year of age to 1,000 registered births, ranged from 131 in Cardiff, 137 in Portsmouth, and 139 in Birkenhead, to 191 in Bradford, 194 in Blackburn, 197 in Wolverhampton and in Hull, and 240 in Preston. The rate of mortality among children and adults aged between one and sixty years did not exceed 7·1 in Norwich and 7·6 in Leicester, while it was equal to 15·6 in Sunderland, 16·2 in Manchester, and 18·7 in Plymouth. Among persons aged upwards of sixty years the death-rate ranged from 62·6 in Cardiff, and 63·6 in Norwich, to 107·1 in Manchester, and 111·6 in Blackburn. The 131,698 deaths registered in England and Wales during the quarter ending December last included 12,913 which were referred to the principal zymotic diseases; of these, 2,657 resulted from whooping-cough, 2,547 from measles, 2,210 from diarrhœa, 2,077 from scarlet fever, 1,733 from "fever" (including typhus, typhoid, and simple and ill-defined forms of fever), 1,681 from diphtheria, and only 8 from small-pox. These 12,913 deaths were equal to an annual rate of 1·77 per 1,000, which was 0·52 below the average rate in the ten preceding corresponding quarters. The zymotic death-rate in the twenty-eight towns last quarter averaged 2·01 per 1,000, and ranged from 0·56 in Huddersfield, and 0·69 in Leicester, to 3·20 in Preston, 3·36 in Salford, 4·55 in Sunderland, and 7·23 in Plymouth. In fifty other large town districts the zymotic death-rate averaged 1·96 per 1,000, while in the remaining and chiefly rural parts of England and Wales it was 1·59 per 1,000.

Whooping-cough was the most fatal zymotic disease in England and Wales during the quarter under notice. The 2,657 deaths attributed to this disease were equal to an annual rate of 0·36 per 1,000, which slightly exceeded the average rate in the corresponding periods of the ten years, 1879–88. In the twenty-eight large towns the death-rate from whooping-cough averaged 0·41 per 1,000, and was highest in Portsmouth, Hull, Bristol, and Wolverhampton. The 2,547 fatal cases of measles were equal to an annual rate of 0·35 per 1,000, against an average rate of 0·47 in the corresponding periods of the ten preceding years; among the twenty-eight towns the rate of mortality from this disease averaged 0·34 per 1,000, and was highest in Nottingham, Preston, Bradford, and Sunderland. The 2,210 deaths referred to diarrhœa were equal to an annual rate of 0·31 per 1,000, which was considerably below the average. In the twenty-eight large towns the diarrhœa death-rate corresponded with the general English rate from this disease; among these large towns the highest rates of mortality from diarrhœa were recorded in Newcastle-upon-Tyne, Salford, and Preston. The 2,077 fatal cases of scarlet fever were equal to an annual rate of 0·28 per 1,000, which was little more than half the average rate in the ten preceding corresponding quarters; the rate of mortality from this disease averaged 0·39 per 1,000 in the twenty-eight large towns, among which scarlet fever was proportionally most fatal in Blackburn, Liverpool, Bolton, and Plymouth. The 1,733 deaths referred to different forms of "fever" (principally enteric) were equal to an annual rate of 0·24 per 1,000, the average in the ten preceding fourth quarters having been 0·31. In the twenty-eight large towns the fever death-rate aver-

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aged 0·27 per 1,000, and was highest in Birkenhead, Leeds, and Preston. The 1,681 fatal cases of diphtheria were equal to an annual rate of 0·23 per 1,000, which exceeded by 0·06 the average rate in the corresponding periods of the ten preceding years. In London the rate of mortality from diphtheria was as high as 0·41 per 1,000, while it did not average more than 0·19 in the twenty-seven provincial towns, among which, however, this disease was fatally prevalent in Plymouth and Salford. The deaths referred to small-pox in England and Wales, which had been 8, 10, and 2 in the first three quarters of the year, were 8 during the three months under notice. Thus only 28 fatal cases of this disease were recorded during the whole of 1889; the nearest approach to so small a number was in 1886, when 275 deaths resulted from this disease in England and Wales.

The causes of 120,343, or 91·4 per cent., of the 131,698 deaths in England and Wales last quarter were duly certified by registered medical practitioners, and 7,520, or 5·7 per cent., by coroners after inquests. The causes of the remaining 3,835, or 2·9 per cent., of the deaths were not certified. In London the proportion of uncertified deaths did not exceed 0·9 per cent., while it was 3·3 in the remainder of England and Wales. In the twenty-seven large provincial towns the proportion of uncertified deaths averaged 3·0 per cent., and ranged from 0·7 and 0·9 in Plymouth and Portsmouth, to 4·5 in Hull, 4·8 in Halifax, 6·3 in Liverpool, and 7·7 in Huddersfield.

COMPULSORY NOTIFICATION OF INFECTIOUS DISEASES.

THE subjoined list of local authorities who have, since our last issue, adopted the Infectious Disease (Notification) Act, 1889, gives a satisfactory indication that, ere long, practically the whole of England and Wales will be under the system of compulsory notification of infectious disease. Already 403 urban, 290 rural, and 13 port sanitary authorities, representing upwards of 10,667,153 persons, have voluntarily adopted the Act, among the most important towns being Liverpool, Birmingham, Bristol, Cardiff, Coventry, Devonport, Plymouth, Hull, Sheffield, Exeter, Yarmouth, Hanley, Margate, Middlesbrough, St. Helen's, Southampton, Wolverhampton, &c.

In addition, the Act applies to London with its 4,000,000 of inhabitants, whilst 59 of the large towns, having an aggregate population of 3,828,824, have, from time to time, acquired similar powers by local Acts.

Name of Authority.	Population (1881).	Date on which Act comes into force.
Urban Authorities:—		
Allerton	830	Feb. 10, 1890.
Ashby Woulds... ...	2,929	March 3, 1890.
Bala	1,653	Jan. 16, 1890.
Banbury	12,072	March 10, 1890.
Barkisland	2,102	Dec. 25, 1889.
Batley	27,505	March 1, 1890.
Beaconsfield	1,635	Dec. 9, 1889.
Bicester	3,306	Feb. 11, 1890.
Bingley (Imp. Commrs.)	8,972	Feb. 1, 1890.
Birmingham	400,774	Jan. 20, 1890.
Blackrod	4,234	Feb. 17, 1890.
Blaenavon	9,501	Feb. 1, 1890.
Bowdon...	2,559	Jan. 1, 1890.
Bromsgrove (Town Dis.)	7,960	March 1, 1890.
Camborne	13,601	Feb. 17, 1890.
Carlisle...	35,884	March 1, 1890.
Cheshunt	7,735	,,
Chippenham	4,495	March 25, 1890.
Clayton...	4,801	March 1, 1890.
Clayton-le-Moors ...	6,695	Feb. 18, 1890.
Colchester	28,374	Feb. 5, 1890.
Diss	3,846	Jan. 1, 1890.
Droitwich	3,761	Jan. 13, 1890.
East Dereham	5,640	March 1, 1890.
East Molesey	3,289	Feb. 1, 1890.
Evesham	5,112	March 1, 1890.
Exmouth	6,245	Feb. 4, 1890.
Fareham	7,183	March 1, 1890.
Greetland	4,166	Jan. 31, 1890.
Handsworth (Staff.) ...	22,896	March 1, 1890.
Hendon...	10,484	Jan. 1, 1890.
Hucknall-under-Huthwaite...	2,028	March 15, 1890.
Hunsworth	1,516	March 1, 1890.
Hyde	28,630	,,
Ilkley	4,736	Jan. 1, 1890.
Jarrow*	25,469	Feb. 12, 1890.
Kendal	13,696	March 10, 1890.
King's Lynn	18,589	March 1, 1890.
Kington	2,075	Jan. 1, 1890.
Leigh	21,734	,,
Lewes	11,199	Feb. 10, 1890.
Leyton	27,068	,,
Liverpool	552,508	Sept. 1, 1890.
Lowestoft	19,696	Feb. 1, 1890.
Margate	16,030	April 1, 1890.
Midgley	2,939	Feb. 21, 1890.
Much Woolton ...	4,541	Jan. 13, 1890.
Ovenden	7,487	March 1, 1890.
Prescot...	6,419	Feb. 13, 1890.
Pwllheli	3,242	March 1, 1890.
Radstock	3,074	
Ravensthorpe	4,364	March 1, 1890.
Redditch	9,961	Jan. 1, 1890.
Rugeley	4,249	Jan. 7, 1890.
Saltash	2,362	Feb. 10, 1890.
Sandgate	1,669	Feb. 1, 1890.
Sherborne	5,053	March 1, 1890.
Shirley & Freemantle...	12,939	Feb. 15, 1890.
Sidmouth	3,475	March 1, 1890.
Southampton	60,051	,,
South Molton	3,340	,,
Sowerby Bridge ...	8,724	,,
Soyland...	3,467	Dec. 25, 1889.
Stainland - with - Old - Lindley	4,933	,,
Stamford	8,773	Feb. 1, 1890.
Stockport	59,553	Feb. 12, 1890.
Stratford-upon-Avon ...	8,054	Feb. 15, 1890.
Sutton-in-Ashfield ...	8,523	March 1, 1890.
Thurlstone	3,442	March 26, 1890.
Torrington (Great) ...	3,445	Feb. 10, 1890.
Upper Mill	1,384	March 1, 1890.
Wallsend	6,351	,,
Wells (Somerset) ...	4,634	,,
Whitchurch & Dodington	3,756	Feb. 5, 1890.
Whitefield	9,516	Jan. 10, 1890.
Willington Quay ...	4,974	
Wilmslow	5,664	Feb. 1, 1890.
Wood Green	25,000	March 1, 1890.
Rural Authorities:—		
Asaph, St.	15,283	Feb. 1, 1890.
Ashford, West... ...	8,433	,,
Billericay	18,437	Dec. 10, 1889.
Birkenhead	391	Feb. 8, 1890.

* The compulsory notification clauses of the Jarrow Improvement Act, 1884, have thus been superseded by the Act of 1889.

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Name of Authority.	Population (1881).	Date on which Act comes into force.
Rural Authorities:—		
Brampton	10,565	Feb. 25, 1890.
Bridlington	8,621	March 1, 1890.
Chesterfield	54,314	,,
Church Stretton ...	5,672	Feb. 1, 1890.
Epping	21,754	Jan. 24, 1890.
Flegg, East and West...	9,714	March 1, 1890.
Kingsclere	8,524	,,
Kington	10,130	,,
Lancaster	17,322	Dec. 18, 1889.
Lanchester	40,519	March 1, 1890.
Melksham	4,856	,,
Neot's, St.	12,646	Jan. 13, 1890.
Newcastle-under-Lyme	5,663	March 1, 1890.
Pwllheli	18,561	,,
Royston	18,623	,,
Saddleworth	12,876	,,
Shaftesbury	10,350	April 1, 1890.
Stockbridge	6,972	March 1, 1890.
Stockton	10,137	Feb. 5, 1890.
Stow-on-the-Wold ...	7,493	Feb. 10, 1890.
Thetford	13,598	Feb. 7, 1890.
West Bromwich ...	3,565	Feb. 15, 1890.
Weymouth	8,179	March 1. 1890.
Wigan	5,554	Feb. 1, 1890.
Wimborne & Cranborne	16,991	Jan. 1, 1890.
Witney	18,519	Feb. 1, 1890.
Worksop	16,897	,,
York	27,165	Dec. 14, 1889.
Port Authorities:—		
Falmouth	—	Feb. 20, 1890.
Liverpool	—	Sept. 1, 1890.
London...	—	March 1, 1890.
Lowestoft	—	Feb. 1, 1890.
Total ...	2,158,345	
Population of districts given in previous lists ...	8,533,808	
Grand total ...	10,692,153	

SOME DEFECTS IN THE PUBLIC HEALTH ACT, 1875.

By C. C. SMITH, M.San.Inst., Surveyor and Sanitary Inspector, Skipton.

THE opportune paper on "The Public Health Act, 1875," by Mr. W. Wilkinson, which appeared in the last issue of the SANITARY RECORD, prompts one to carry this matter further and explain some of the anomalies and defects which have presented themselves as difficulties and *impedimenta* in the carrying out of one's duties, not only as a sanitary inspector, but also as a surveyor in a large district embracing one wide rural and two urban sanitary authorities.

There is no subject in which the community at large are, or should be, so much concerned as in public health. Yet the subject was almost entirely neglected until the Public Health Act, 1875, came into being. This Act was a valuable addition to our laws, and highly commendable on the part of the legislature. But 15 years experience of its working has shown that efficacious as it was in the several years immediately succeeding its adoption, yet progressive knowledge in public hygiene, and the tests to which the Act has been placed, show that there are a host of imperfections contained in it. To reduce litigation, simplify its working, and promote the health of the people, the Public Health Act of 1875 should be thoroughly revised and supplemented, and the numerous subsequent sanitary Acts consolidated into one Public Health Act.

The following are some of the defective sections:—

Sect. 15.—"Every local authority shall keep in repair all sewers belonging to them, and shall cause to be made sewers," &c.

With this section there needs to be read the definition of a sewer, which has been held to be that "a drain is a 'sewer' as soon as more than one house has been connected with it."

Sect. 19.—"Every local authority should cause the sewers belonging to them to be constructed, covered, ventilated, and kept so as not to be a nuisance or injurious to health, and to be properly cleansed and emptied."

From the above two sections it will be seen that the duty of cleansing and repairing all joint drains (except sewers made for private profit) is imposed on the local authority, and if they neglect they will be in default. This is a most harmful and unjust provision, and imposes costs to the rates for the benefit of "jerry building" owners who "run up" houses and connect the drains of two dwellings instead of carrying separate drains into the main sewer, and thus make the authority responsible for its subsequent cleansing and repair! In rural districts, too, where building bye-laws are not in force, owners may and do connect drainage in fantastic ways. Still the authority are helpless and impotent, while additional burdens are being cast upon them.

The major fault of this section has been caused by the improper definition of sewer and drain, and the omission of a provision that the sewer must be formally dedicated to, and accepted by, the local authority.

It will be noted that no power of entry on private lands is given the authority.

Sect. 23.—"Local authority to enforce drainage of undrained houses."

This section is slightly altered from 11 and 12 Vict., c. 63, sec. 49, which required the report of the surveyor as to insufficient drainage. The surveyor's report is not now necessary. It is a singular anomaly, however, that the inspector may report as to insufficient drainage, but the surveyor has to report as to required size of drain. It happens that in a very large number of rural districts the authority have no surveyor employed, while in many small urban districts the surveyor is merely a "working ganger," or foreman on the roads, who knows as much about the necessary drainage as he does about Diogenes.

The words "from the site of such house" should be intelligibly expressed. At present it may mean either the curtilage, or the piece of land on which the house itself stands.

Sects. 35 and 36.—"House without sufficient w.c., e.c., or privy."

All surveyors and inspectors know that on sanitary grounds it is very needful that a separate w.c., e.c., or privy, and ashpit should be provided for each house. Yet this could probably not be enforced under the section.

Sect. 38.—"Local authority on report of surveyor that factory, &c., wherein persons of both sexes are employed, may require owner or occupier to construct sufficient number of w.c.'s, e.c.'s, or privies, and ash-pits for the separate use of each sex."

The delegation of this report to the surveyor alone renders the section of little effect. It is a health officer's duty, and as such he should have the supervision transferred to him. Whilst w.c.'s, e.c.'s, or privies should be made for the separate use of each sex, one tries to divine why the framers of the section required ashpits also for the separate use of each sex

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Sect. 41.—"Drains to be examined on complaint."

Until the inspector is given some authority in urgent cases, presumably provided for under such sections as this, his action is at a serious discount. Most authorities only meet once a month, and before red-tapeism has sufficiently extended itself, and the authority had its meeting, lives may have been lost.

Sect. 47.—"Keeping swine, stagnant water in cellar, and over-flowing cesspools."

The expenses incurred by the authority under this section are recoverable only from the occupier of the premises, and as "stagnant water" usually arises from a structural defect of the premises, it is against the general tenor of the Act to make the occupier responsible for the debts of the owner.

Sect. 49.—"Removal of filth on report of inspector."

Express power is not given to enter nor to remove, hence a difficulty arises when the offensive matter is unsalable.

Sect. 62.—"Local authority to require water to be supplied to houses on report of surveyor."

The report as required under this section should devolve on the inspector. Some of the most important sections are, it will be seen, rendered almost nugatory by this fatuitous delegation of duties to one and the improper officer.

What, too, is intended to be meant by inserting a restriction that "the cost of the water must not exceed 2d. a week"? There is nothing said about the ratable value of the house; so that if a house rated at £20 cannot be supplied at a cost not exceeding 2d. a week, the section is inapplicable! And this it would be in probably 90 per cent. of instances, if strictly carried out.

The words "a proper supply of water" are too ambiguous, and should refer to a "proper and sufficient supply of wholesome water."

Yet another blunder in this section is that it is only applicable when water can be obtained from water-mains belonging to a water company or local board. Hence in urban districts isolated dwellings cannot be reached at all under any section in the Public Health Act.

Sect. 70.—"Power to close polluted wells."

Local authorities may take fairly ready and summary proceedings against mere nuisances which are not injurious to health, but a water supply which may contain the bacillus of enteritis can only be closed after representation by some person, and then a circuitous length of red-tapeism has to be traversed, and magisterial opinion to be obtained, and so forth. The whole section is badly framed, and has evidently been pitchforked into the Act as an afterthought. The authority are not even required to satisfy themselves of the complaint, nor is the medical officer of health accounted of any virtue herein.

Sect. 77.—"Lodging-houses to be registered."

The term "member of his family" is a problematical one, and, as occurring also in sect. 87, should be defined intelligibly, for there is no authority to limit it to the person's children.

Sect. 78.—"Registration of common lodging-houses."

"Vested interests" here, verily! A local authority is unable to take away a licence from a common lodging-house after it has been once registered, save in the remote case where a proper supply of water is not provided. This is a pretty safeguard for the owners of these dens of infamy and immorality and crime, and in its thoroughness out-Herods Herod himself.

In my experience as an inspector of a district containing at the present time not less than 40 common lodging-houses, I find that the keepers of these houses begin fairly well, and comply with the Act and bye-laws, but in most cases they deteriorate in the character and mode of maintenance of their houses; the structural condition becomes bad, but still the authority cannot remove the house from the register.

These licences should only be granted for one year, and renewable only after a satisfactory report as to cleanliness, proper mode of keeping, and structural fitness being given by the inspector.

Sect. 91.—"Nuisances."

This valuable section is marred in many of its clauses by profuseness and indefiniteness.

As suggested by Mr. Wilkinson, in the number of January 15, some sensible definition as to what is a public and what a private nuisance should be laid down. Every inspector knows that he is expected to redress all the ills to which that crotchety, quarrelsome cottagers and owners make themselves heirs.

It is a common supposition that boards should fight the legal battles of individual litigious persons, and inspectors need to be very circumspect that they are not misled, and do not depart from the strictly neutral line imposed on them by their duty.

That boards themselves do enter into litigation on account of private owners at times, none can deny, but this is merely a result of the improper definition of what is a "common nuisance."

(To be continued.)

THE DANGERS OF ELECTRIC LIGHTING.

By J. Neville Porter.

Until very recently but comparatively few persons not connected with electric lighting and fire insurance business appear to have been aware of the serious personal injuries, terrible loss of life, and great destruction of property by fire that may occur, and which have resulted from the electric light.

A strong public feeling has been created on this subject by the notification in the daily and other newspapers during the last three months of the accidents, deaths, and fires which have occurred in New York, Boston, and other places in the United States from the falling of electric-light wires and other causes attributable to the defective installation of the new illuminant.

Much false information is unfortunately diffused among an overwhelming majority of persons respecting the danger of electric lighting, and its causes. This ignorance is mostly due to inaccurate statements by newspapers and periodicals published for general readers. Even from the electrical press and other technical publications, a sufficiency of reliable facts and opinions on the subject of this article can only be gathered after referring to a great number of treatises, articles, and notes on the question, as it is only discussed in these publications to a partial extent, and generally in a very fragmentary manner.

For these reasons, and the additional one that the public interest in the question has greatly increased during the last twelve months, owing to the numerous schemes afloat and arrangements which have been made to utilise the electric light on a far more extensive scale than previously, both in dwelling-houses as well as other buildings, I will now endeavour to briefly

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notify what I believe to be the more essential information which it is desirable to communicate to the public concerning the hazards of this illuminant, and how these can be minimised, if not avoided.

According to a statement of Mr. Edison, the eminent electrician, in a recent number of the *North American Review*, on the "Dangers of Electric Lighting," the currents now used "may generally be divided into four classes: (1.) The low tension continuous current, with a pressure not exceeding 200 volts, used for incandescent lighting. (2.) The high tension continuous current, with a pressure of 2,000 volts and over. (3.) The high tension semi-continuous current, with a pressure of 2,000 volts and over; and (4.) The alternating current, with a pressure of from 1,000 to 3,000 volts and over. The first is harmless, and can be passed through the human body without producing uncomfortable sensations. The second is dangerous to life. Momentary contact with a conductor of the third results in paralysis or death, as has frequently occurred. And the passage of the fourth or alternating current through any living body means instantaneous death." The New York correspondent of the *Daily News* has obtained from the official records a list of persons killed by the electric-lighting wires since 1880. Before that date the arc light circuits, with continuous currents, were much used, and for five years no deaths resulted therefrom. Pulsating and high tension currents were used for arc lights between 1880 and 1887, and 72 deaths took place during that period, from the wires of which 62 were from the pulsating current. For the last two years the alternating high tension current has been greatly in use, and no less than 44 persons have been killed by it, making the total number of deaths in various parts of the country from electric-light currents, during the nine years, 116. In New York city alone 25 persons have been killed within two years, and nearly all by the alternating currents. It is stated that all the deaths are not given in this list, but only those officially reported, with names and particulars. Experts estimate that there have been at least 200 fatal accidents in various parts of the country from electric-light currents since 1880.

I will now mention a few noteworthy cases in which deaths have occurred in various ways from contact with these currents. In December 1881 a labourer in the employment of the Marquis of Salisbury was at once killed by accidentally coming in contact with a bare electric-light wire which was fixed against a garden wall, and which conveyed the illuminant to Hatfield House. About this period an extraordinary death occurred from handling one of the electric-light wires in the Cathedral of Cotopaxi. During a festival which was being held before a large congregation in that edifice, a gang of brigands, who came there to plunder, determined to begin their nefarious work by severing the electric light wire, which was unprotected or uninsulated. We are told that the chief of these robbers "threw a small wire over the electric light wire with the intention of drawing it down and opening the circuit. The misguided man, however, somehow managed to 'make good earth' of his body in more than one sense, for the current passed through him, killing him instantly." Upon noticing this terrible fate to their comrade, the other members of the gang quickly left the cathedral, without committing or attempting any robbery. In another instance, a young man was passing along a street at Pittsburgh, and was immediately killed by touching an iron post supporting a shop awning. The cause of this was that the street electric-lighting wire had made a contact with this post, and the short circuit constituted a death-trap for the first passer-by who touched the post. In November 1888 the superintendent of construction of an electric lighting company in New York was upon a ladder making some changes in the switch-board. In one hand he held a live wire, and was about to secure it to a terminal, when the ladder slipped, and he caught hold of a bar of the switch, whereby he completed a circuit through his body. He was thrown to the ground, and when picked up was unconscious, and he died in two hours afterwards, notwithstanding the efforts of two medical men to restore animation. The wires carried an alternating current, and the pressure is stated to have been 1,000 volts. Nearly six months previously an employé of the same company received a shock from a wire carrying a current of 2,000 volts, but was not seriously hurt. This was probably the continuous, and not the alternating current. Again, about three weeks ago, at Toledo, in the State of Ohio, a glazier was working on a tin roof measuring a skylight, when his sleeve, which was wet from rain, touched the wires which led to the incandescent lamps with an alternating current. He fell dead in such a position that his body lay supported by the wires, and was only found by accident some hours after the occurrence. On January 2, an electric light wire fell to the ground near a street corner at St. Louis. A few moments later a Mr. and Mrs. Smith and a little dog passed the corner. The dog touched the wire, and was killed instantaneously. Mrs. Smith ran to the dog, and, not seeing the wire, stepped on it. She was thrown some distance, and fell unconscious. Her husband received a severe shock on endeavouring to pick her up, but was not rendered insensible. Although Mrs. Smith was restored to consciousness by a physician, she had a narrow escape from death. A horse was also killed by stepping on a fallen wire.

A further fatal accident arising from overhead wires is reported from Newburgh, New York State. A horse, while being driven along, touched an iron awning-post with his nose, and fell down as if dead. A man who went to raise the animal touched the horse's head-stall, and immediately dropped dead, and another man who attempted to lift him received a violent shock. The cause of the accident appears to be that an electric wire had become slack, and was lying upon an iron rod extending from the awning-post to a building, and that the full force of the current was passing down the post into the ground. The insulating material of the wire had become thoroughly saturated with rain. The horse was not killed by the shock, and the second man was only stunned.

Some very serious accidents have also happened by accidentally touching electric light conducting apparatus. In one case, where part of the conducting wire from a dynamo electric machine was not insulated or protected, a person touched a lampstand which formed part of the conducting system. His body thus formed a connection through the ground to the base wire, and so contracted his muscles as to cause his hands to clench the lamp. At that time ten lamps were in circuit, and so much of the electric current passed through him that eight of them were extinguished. He was unable to unclasp his hand as all his muscles were paralyzed. His face was also much distorted, and he could scarcely breathe. He could only utter a faint and unnatural

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cry. A friend tried to unclasp his hand, but could not. By lifting his legs from the ground, however, the circuit was broken, and his hands became free. Burning sparks, however, flew to his hands while breaking the circuit. He was then insensible, but recovered.

As to the injury and destruction to property by fire from the electric light, it has been shown that even incandescent lamps will ignite inflammable substances when the heat in the lamps is confined and allowed to accumulate, and to do this the lamps need not break. It has further been proved that the breaking of an incandescent lamp will set fire to inflammable gases.

The buildings which are reported to have been fired by the electric light, include the House of Representatives at Washington, the Canadian House of Parliament, the Calcutta Exhibition Building, the Forestry Exhibition building at Edinburgh, several theatres, and many factories and other buildings. In 1881 and 1882, about 23 fires were caused from 61 electric-light plants in the eastern portion of the United States. Twenty-two fires occurred there in 1887 from improperly insulated wires. According to the American insurance press, many fire offices refuse to insure buildings in America illuminated with the electric light, while other offices will only insure them at an immense premium. During the blizzard in New York, a great number of overhead wires were blown down. On one night the streets of that city were full of dangling ends of telephone wires, which, in hundreds of cases, fell down across the electric light wires. The *Weekly Underwriter* of New York, in its comments on this question, stated that "had the electric light been turned on as usual, New York would have been on fire in hundreds of places within an hour, and the almost helpless condition of the fire department would have made it impossible for much to have been done towards putting these out. We do not see how the city could have escaped a terrible conflagration. These broken telephone wires would have carried the sparks in all directions into awnings, houses, stores, and everywhere else, and the effect would have been terrible. . . . Had the powerful electric-light currents been turned on, there would have been great loss of life, as those ends would have become so many death-dealing points." The great Boston fire which has very recently occurred, whereby from four to five millions of dollars worth of property was destroyed, is supposed to have originated from an electric-light wire, which was carried to a point of combustion over a small wire actuating an electric clock. A fire occurred a few weeks ago at a French theatre from unprotected electric-lighting wires. During a rehearsal of *Jeanne d'Arc*, a new spectacular piece which was being prepared at the Porte St. Martin Theatre, Mdme. Sarah Bernhardt, in the last act, ascended a funeral pyre, which, by a combination of electric lights and red lamps, appears to be on fire. By mismanagement, two uncovered electric wires came into contact and set fire to the scenery at the base. A thick smoke immediately arose, and began to suffocate this celebrated actress, who fainted as soon as she had been taken from the dangerous position. Two mechanics who were engaged in extinguishing the flames, were half-stifled by the smoke and badly burnt. Only one could be revived, and he was conveyed in an ambulance to St Louis' Hospital, while his comrade died. On December 28 a serious fire broke out at twenty minutes past 11 o'clock P.M. at 8, Grosvenor Square, London, the residence of Mr. W. A. T. Amherst, M.P. The fire started in a back room on the second floor, and is said to be owing to the over-heating of an electric-light wire. The back portions of the second and third floors were very much damaged, and the whole house of 30 rooms and their contents suffered from heat, smoke, and water. The probable origin of the fire is mentioned by Mr. Musgrave Heaphy, C.E., Consulting Electrician to the Phœnix Fire Office, in a report published in a letter from Major Waller in the *Times* for January 2. "The conductors," Mr. Heaphy states, "were in contact under the floors. They were encased and fastened by metal staples. Among the few places that I was able to examine, I found that a staple had cut into the insulation. The conductors in another place were in contact with the bell wires." The *Electrician* properly states that with wiring of this description a fire was only a question of time, whether the house was connected to a high or a low tension system. On January 2 the down-town station of the Edison Electric Lighting Company, of New York, caught fire in the morning, and was entirely destroyed, whereby a loss of about 100,000 dollars is sustained by the company. The station occupied two four-storey buildings, and supplied electricity to 18,000 incandescent lamps. The fire started in the dynamo-room, but it is unknown how it broke out. It is supposed that it may have been caused by sparks from a dynamo. About the end of last month sparks from an electric wire are reported to have set fire to the Everett Building, in Ann Street, New York, just below the *Herald* office.

Very serious explosions in the subways of New York city, which are designed to enclose the electric-light wires underground, have recently occurred. The cause of these accidents is supposed to be the filtering in of gas from leaky mains, and which gas is exploded by a casual spark, sometimes coming from electric-light wires. On December 21, one side of the great thoroughfare covering 10 or 12 feet of surface space at Twenty-Ninth Street, amounting to several tons weight, suddenly shot into the air amid a geyser of flame, and many pedestrians had their persons and clothing injured by the subsequent fall of *débris*. The gas companies have no right to enclose their mains in conduits containing electric-light wires, as the leakage of gas from the mains is frequently very great, and, therefore, there must be danger if they are close to the new illuminant wires. It appears that the presence of coal gas in wet or damp situations is injurious to many good insulating materials, and will render the replacement of cables necessary which have, by its presence, become too much diminished in insulating qualities.

A very great sensation has been caused among the general public as well as among electricians and the fire insurance classes by the denunciation of high tension electric currents for illumination in the before-mentioned article by Mr. Edison. He states that "there is no plea which will justify the use of high tension and alternating currents, either in a scientific or a commercial sense. They are employed solely to reduce investment in copper wire and real estate. For instance, in arc lighting it is customary to put 40 lamps on each circuit; each lamp requires a pressure of 40 volts, and, therefore, the total pressure on the circuit is 2,000 volts. Now, if instead of using only 1 wire for all these lamps, 4 circuits of 10 lamps each were to be established, the pressure on each wire would be only

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500 volts. The weight of copper necessary for these 4 circuits of 10 lamps each would be 2½ times greater than for the circuit of 40 lamps—a question, as I have said, simply of investment."

The majority of practical electricians, both at home and abroad, as well as the electrical press, disagree with Mr. Edison's recommendation for using low pressure currents only, on the ground that the high tension currents now in use are absolutely necessary for the successful and economical working of light and plants, so that to substantially reduce the pressure would be to so increase the cost of electric light as to put them out of the reach of many consumers, and greatly cripple the electric light industry.

In a report made by Mr. Heaphy to the Phœnix Fire Office in 1882, upon the various systems of electric lighting and the dangers attending them, which he made in that year, he expressed the opinion that "where systematic and proper precautions are taken, there is less danger from electric lighting than from gas; but that if carelessly or ignorantly arranged or improperly worked, then serious fires may be apprehended." He adds that the whole of his experience from that day to this has gone to confirm that opinion. The Phœnix Fire Office rules, which are now in their sixteenth edition, are known all over the world. They were published in 1882, and have been generally adopted. Directions are given in them for every detail in the installation of the electric light, and not a single fire has occurred from any installation made in compliance with them, although the high tension system is used under such, and insurers can use gas concurrently without extra premium. This testimony is very strong in favour of the use of currents of high tension in this country. All life and fire risks from the electric light are due to defective installations, many of which occur both here and abroad from cheap and scamped work. The public are much to blame for this, as they often engage a contractor to undertake an installation who will do it at the cheapest price, and seldom call in an expert electrical engineer to supervise his work. There is, however, a considerable check on this bad workmanship, as the Phœnix and other fire offices carefully inspect the installation, and if they are not satisfied with it or a portion of such, they inform their customers of this fact. Some users of the electric light arrange for periodical inspection of their electric lighting apparatus by competent electrical engineers. The London Electric Supply Corporation will not now turn on the current until they are convinced that the installation to which they are requested to supply it, is done according to their specifications, which comprise the Phœnix rules.

In addition to the Phœnix rules for installing the new illuminant, others have been issued by the Westminster, the Guardian, the Sun, and the North British and Mercantile Fire Insurance Companies, and the Society of Telegraphic Engineers and Electricians, which has recently changed its title to that of the Institution of Electrical Engineers, but none of them have superseded those issued by the Phœnix Office, or are likely to do so. It has been stated, and with some show of reason, that the multiplicity of rival rules for fixing the electric-light plant has been a powerful inducement for unscrupulous contractors to do cheap and scamped work.

It is provided by the Electric Lighting Act of 1882 that the Board of Trade may make such regulations as they may think fit for securing the safety of the public from personal injury or from fire or otherwise. This department has already issued regulations for the protection of the public safety, and of the electric lines and works of the Postmaster-General, and of other electric lines and works. Further regulations have been issued by it under various district electric lighting licences and orders for ensuring a proper and sufficient supply of electrical energy under safe conditions. An additional set of regulations has also been drafted by the Board of Trade for securing the safety of the public and ensuring a proper and sufficient supply of energy. They have been submitted to the Institution of Electrical Engineers for their opinion, and will shortly, with probable slight amendments, be adopted. These several regulations contain many provisions of importance for causing electric lighting to be more safely used. Time alone will prove whether they are sufficient for this purpose.

The American Electric Light Association, in one of their resolutions passed in November last, state that the recent electric-light accidents in the United States have been owing to faulty construction and defective insulation, coupled with restrictive legislation and divided responsibility, which for years have prevented such comprehensive repairs and reconstruction as would have ensured safety and good service.

Mr. Edison is of opinion that the insulation of a wire carrying a high tension current in the most efficient manner known will only be safe temporarily, as it will deteriorate by air abrasions, &c. On this subject, the statement by Mr. Heaphy to a *Pall Mall* representative is important. He said that the insulating material of the best kind would be in as good a condition at the end of 25 years as it is at the present time, but inferior kinds of insulation may perish very quickly. It seems, therefore, advisable that proper care should be taken to renew the insulating material at proper dates, and to determine when to do so is a matter of great doubt which time and experience may solve.

Among the numerous suggestions that have been made to diminish the accidents from electric-light wires, the most popular one appears to be to put them underground. Mr. Edison, however, states that the risk incurred by the general public with an efficient system of overhead wires is really less than it would be if they were fixed underground. His reasons for this conclusion are exceedingly important, and are particularly worth quoting. He states that "There is no known insulation which will confine these high tension currents for more than a limited period, and when they are placed beneath the ground with the present system of conduits, the result will be a series of earth contacts, the fusion of wires, and the formation of powerful electric arcs which will extend to other metallic conductors in the same conduit, and a whole mass of wires made to receive the dangerous current and convey it into houses, offices, stores, &c. It is thus evident that the danger of such circuits is not confined to the wires which convey the high tension currents, but other wires conducting harmless currents are liable to be rendered as deadly in effect as the former. It is evident also that a single wire carrying a current at high pressure would be a constant menace to the safety of all other wires in the same conduit. Even though these dangerous wires be placed in separate tubes in the same conduit with other tubes, the risk is not diminished."

It appears, from the statements of other eminent electricians, that with proper underground mains and

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insulation of electric-light conductors, these ill-results may be avoided.

Mr. Edison adds that "Several instances are on record, showing the possibility of serious accidents through the crossing of wires. Near the corner of William and Wall Streets, New York, the underground conductors of the Edison Illuminating Company became crossed, and the current which was passing through them at a pressure of only 110 volts, melted not only the wires, but several feet of iron tubing in which they were encased, and reduced the paving stones within a radius of 3 or 4 inches to a molten mass. This system is so arranged that consumers are not affected by such accidents as this. They may and do mean expense to the company, but the public are entirely free from any possibility of danger. The crossing of wires in this way means the concentration of several hundred horse-power of energy in a small space. What would have been the effect of such a cross as I have described had the pressure been 2,000 instead of 110 volts? and what also might be the effect were it to occur in a conduit in close proximity to hundreds of telephone wires, and those of other electric-lighting systems. The risk, too, is greatly increased by the fact that consumers who are supplied with currents from a low tension system are accustomed to handle their electric appliances freely, knowing them to be harmless. If these are to be rendered at any moment dangerous to life, the result will be appalling."

An exceedingly important article was published in the *Engineering* newspaper on Jan. 7 and 10, written by Messrs. De Ferranti and F. Ince, which is strongly opposed to the article written by Mr. Edison. In answer to his last quoted statements, they say that the tension in the mains to which Mr. Edison refers "had nothing whatever to do with the heating effect of the current. It was the quantity, and the quantity alone, that caused the heat . . . and where was Mr. Edison's bridge or fuse at the central station. It is clear he could have had none, or it would have melted before any damage could have been done. Mr. Edison may argue that with increased pressure it is possible to force a greater quantity through a main, and that, therefore, a 10,000 volt pressure is more unsafe than 100 volt pressure; but this is not the fact, as the conductor to be melted is only one hundredth the size of the main it will heat and melt sooner . . . but the real answer is that the bridge or fuse at the station if used is, with either high or low pressure, the real safety, as it will never allow so large a quantity of current to pass over it as is necessary to cause the conductor to heat, no matter whether the pressure be 100 or 10,000 volts. Then, again, how did Mr. Edison's mains become crossed, or rather in contact with another conductor crossing his mains at right angles apparently at a street crossing. This must have arisen from the negligent way in which the Edison mains were placed underground without sufficient protection. It is idle to suggest that this is a danger that cannot be guarded against. It is easy enough to protect one conductor underground from, by any possibility, coming in contact with another crossing it in many ways. It is possible to construct mains or underground conductors in such a manner that the passing of another main or conductor at an angle above or in contact with it will produce no harmful result. . . . Even if the current is sent out from the central station at a tension of 10,000 volts, the tension is lowered at distributing stations by a suitable device, and that current the consumer has to handle is only at a pressure of 100 volts, and the pressure is so lowered and controlled that by no possibility can the higher pressure get into any house. What, therefore, is the difference in the danger to the consumer whether the current has an initial pressure of 100 volts or 10,000."

Mr. Edison has stated that alternating currents of even low pressure are dangerous to life. According to experiments, however, made by Colonel Armstrong, as the representative of the Board of Trade, respecting these currents, the assertion by Mr. Edison must be accepted with many reservations. In the presence of Messrs. De Ferranti & Ince, Colonel Armstrong tried the effects of shocks from an alternating current at various pressures. He first took one at 50 volts, and then had the pressure increased to 100, afterwards to 150, and then to 200 volts, at which he stated that he was satisfied and could bear the 200 volt shock with perfect ease, this being twice the pressure of that used in the consumers' houses. . . . Several accidents have occurred, according to the statement of De Ferranti & Ince, where men in a station "have received a direct shock from the machine with a 2,400 volt alternating current, but not in one instance has death resulted." The specimens of low pressure alternating currents, said by Mr. Edison to be dangerous to life, and on which he experimented, are declared by De Ferranti & Ince to have been "pickled and prepared so as to make the effects of the current as deadly as possible, and were therefore placed in an unnatural condition." It is to be hoped that this vexed question will soon be determined satisfactorily.

A New York grand jury on December 27 last, found an indictment of manslaughter against the superintendent of the Brush Electric Lighting Company, whose lamps caused the death of a clerk a short time ago. It also declared that the electric wires were a daily menace to life and property, and the members of the jury state that they are convinced that the business of the generation and distribution of electric currents should be examined by the State Legislature for ascertaining the character of such legislative enactments as may be necessary to provide means for conveying the same without endangering the public.

As it was recently reported that the Electric Lighting Companies were practically going out of business in New York, the *Electrician* has received an important cablegram from its New York correspondent, in which it is stated that this city is not going to abandon electric lighting and return to gas as is alleged. On the other hand, electric lighting is there gaining ground faster than ever, and there will, within a year hence, be at least 25 per cent. more electric lights in New York than now. Every new building is being fitted with this illuminant. It is added that there is already a marked reaction against the wire cutting dictated by local political intrigues. The abolition of the New York Board of Electrical Control is called for, even by newspapers which have been induced to approve of their denunciation of overhead wires.

To minimise the danger as much as possible from electric-lighting apparatus, those who instal and examine it should be duly qualified men. It would be well if some means could be devised whereby they should be required to pass a qualifying examination respecting their fitness for their duties, and if they

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succeeded in doing so, their names should be entered upon a register for qualified electric light engineers.

THE INSPECTION OF PLUMBER-WORK.*

By GILBERT THOMSON, M.A., C.E.

HAD this meeting been for any other purpose than discussion, I would scarcely have presumed to address a gathering of practical men on this subject; but, fortunately, I am in the position not of a teacher giving instruction to those of less attainments than himself, but simply of one giving, from his own point of view, his ideas on a subject of general interest, to be discussed by fellow workers in the same field. It will give me as much pleasure to alter my opinions, if I am convinced they are wrong, as to defend them if I think they are right.

Although the subject is the inspection of plumber-work in general, you will, I hope, pardon me if I confine what I have to say to inside work, and more especially to sanitary work, as being not only the most important, but the only part in which I can claim to have any special experience. Looking at the subject thus restricted, there are three points which I would like to take up, with the proviso that each of them can only get a few words from me, and that I bring them forward chiefly as pegs on which to hang the subsequent discussion.

The three points are: (1) the objects of inspection, (2) the methods of inspection, and (3) the men who inspect.

Running through these, however, there is a second division, for while the work of most tradesmen is inspected only during its progress, plumber-work is frequently inspected—sometimes regularly inspected—long after it is completed. We must, therefore, consider both kinds of inspection as we go on.

First, then, as regards the objects of inspection in new work. It may be taken for granted, without implying the slightest slur upon the workmen, that, other things being equal, work which is well inspected will be better done than work which is not. Assuming, too, that the inspector is thoroughly competent, impartial, and reliable, a good tradesman will prefer to work under inspection. He knows that his work will stand looking into, and, therefore, has no fear. The more thorough the inspection, the more credit he will get.

Now, however important it may be that all the work about a house should be well executed, it is doubly so in regard to the plumber-work, not only because any defects might possibly be detected only by the outbreak of disease, but also because while most work is fixed and has to stand only against decay, the plumber-work is really a piece of machinery which has to stand wear and tear as well. Not only so, but while most machines are under the care of people who know something, at least, of their management, the complicated arrangement of fittings in a house is under the care of people who know little and care less about it, and who, when anything goes wrong from any cause, promptly conclude that the plumber who put in the fittings was an unmitigated rascal. Not but what that is sometimes too true, and it is chiefly to avoid the injury which such men do to everybody, including their more honest brethren, that inspection is necessary. The inspector may either be acting on behalf of the proprietor, under the instructions of the architect or engineer, or he may be a public official, acting in the interest of public health. In either case he has a standard fixed for him, in the one case by the specification under which the work is carried out, and in the other by the local authority whose bye-laws are to be obeyed. He is not responsible for the design of the work, nor for the specification, but he is responsible for all the work being carried out in accordance with these, and very likely, in the case of the architect's inspector, has to take the responsibility of arranging a good deal of detail. He cannot, however, go above his standard, and, therefore, if inspection is to be of any real use, it is essential that the specification should be drawn up by one who understands thoroughly what he is about. A careless specification is sure to produce bad work, for although both the plumber and the inspector know perfectly well that a certain way of doing is bad, still the price has been fixed in accordance with it, and the inspector can demand nothing better, unless at the cost of alarming "extras." It may not be amiss to add that when the price paid is obviously less than good work can be done for, the result is sure to be unsatisfactory, one way or another. With regard to inspection during progress, it may be said, in short, that its object is simply to ensure that the character of the work will not fall below the specified standard.

The object of any future inspection is different. The work is there, be it good or bad, and the inspector, who, as before, is either employed by those interested in the property, or is a public official, has to answer the question, Is the state of the building prejudicial or dangerous to health? In the case of a public official, the standard by which he has to judge it is the lowest one that is consistent with safety. No authority has any right to demand more, although they are, I think, quite right to interpret this in a broad sense, and the standard is fixed on the basis of safety by its professional advisers. In many cases the same standard is taken in an inspection for a private party, but very often further considerations, such as comfort, convenience, and appearance, have to be taken into account. In any case, the chief object is to find out whether or not the system is good in design, whether it is working well, and whether anything, either liquid or gas, can find its way from the pipes into the house. The inspector, obviously, is concerned with many questions which do not concern the inspector of works in progress, and he is very often expected to be able to design any alterations that may be required.

We must hasten on, however, to speak of the methods of inspection. Assuming that the specification is a stringent one, stringently carried out, each piece of material will be examined and must be free from flaws before it is placed in the work. The inspector has to see that all lead is of the proper weight, that light or medium pipes are not smuggled in where heavy pipes are specified, and that all the fittings are of the proper make and proper quality. He has to see that all the pipes have the connections that are intended, that traps are properly shaped, that no pipe is left open in any way to the inside of the house, and, generally, that the idea of the design

* Read to the Scottish Society for the Registration of Plumbers at their third annual meeting in the Trades Hall, Glasgow, on January 20, 1890.

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is intelligently carried out. But even supposing that all this is satisfactory, this sort of inspection is not sufficient without the further experimental proof of testing. I question if there is a plumber here, who, after finishing to the best of his power the piping of a large building, would be willing to vouch for the perfect tightness of every part until he had got it tested. There are so many possibilities of its being otherwise, that even although a man might be willing to "stand on the head" of work he had himself done, I am quite sure that no one would vouch for work which he had only seen done. The usual smoke test therefore, properly applied, is a practical necessity, and discovers many a flaw even in good work. But there is the danger of leaning too much on the test. It is not sufficient for the inspector merely to test a piece of work without having previously inspected it. I have seen many a job, for example, which did not stand the smoke test, and which was yet infinitely better than a great many which did. In the one case the smoke may escape from some slight flaw or overlooked joint, which may be, and is, immediately put right, while the other job, though tight in the meantime, may be bristling with putty joints and light material, and almost ready to fall to pieces. Nevertheless, an inspector going only by the test, would condemn the former and pass the latter. The proper security, of course, is to combine careful inspection with intelligent testing. The inspection secures that sound material is used, and that the workmanship is skilled, while the testing reveals any forgotten joint or accidental flaw. Over and above this, the fittings must be gone over to see that every part is working smoothly, that closet valves fit tightly, that no traps are syphoned, and none of them have been dragged or canted in the fitting, and the numerous little details which, as every plumber knows, do much to make or mar the job. So much, then, for inspection during construction.

Next there is the question of the examination of plumber-work, which in this case must include the drains, after—perhaps long after—the work is completed. It is obvious that there can be no such thoroughness and certainty as in the former case. Drains are buried underground, their very directions being often a matter of great uncertainty, soil-pipes are concealed behind woodwork or, still worse, behind plaster, and all over it often appears as if the chief desire had been to put the plumber-work thoroughly out of reach. It is, therefore, impossible to see much of the pipes. An odd bit here and there may be seen, and a guess may thus be made of the general style of the work, or one may happen to know who was the builder or plumber that fitted it up, and so reason that it is probably good or otherwise. The great sheet anchor, however, is the test, though it does not do to depend upon that alone. An inspector called in to examine a house is very much in the position of a doctor called in to see a patient. In either case the symptoms may be so decided as to show at once what is wrong, but very often one symptom has to be compared with another to get a correct result, and it is in these cases that the difference between the rule of thumb man and the man of skill becomes evident. The inspector has to find out all he can about the particular case—if there is an escape of smoke, to find out where it comes from, and whether it indicates a general rottenness in the whole system, or if it only means an access cover unfastened, or an air-pipe improperly connected, or, perhaps, a trap dried up or syphoned. On the other hand, if there is no smoke, he has to find out why there is none. It may mean that the work is perfect, but it may also mean that no test worthy of the name is being applied; it may be that the smoke supposed to be entering the drain is for the most part going down the common sewer, or escaping at some unnoticed outlet; or that the smoke which is really escaping from the pipes is getting out of sight (I have known it, for example, finding its way into a neighbouring house, and making no appearance in the house under examination), or many other possibilities well known to practical men. I have frequently felt bound, from other indications, to condemn a system of pipes in which little or nothing could be found by testing, although it must be admitted that in these cases the difficulty of convincing the proprietor is apt to be considerable. I need not say that the apparatus used in testing has a considerable influence on the result. The smoke machine has been gradually developed, and the severity of a test may now be made much greater than it was in the earlier days of sanitary work. I have no doubt that many systems of pipes which were tested without effect a few years ago would not stand the tests we have now at command, but, of course, to the general public a smoke test is a smoke test, in whatever way it may be applied.

The last point of which I have to speak is the personal one—that is, of the men who have to do the work we have described. To begin with the inspector of work in progress, what are his necessary qualifications? As a matter of course, he ought to have a thorough knowledge of plumber-work. I do not say he must be a plumber, for that would be equivalent to saying that there must be as many inspectors as there are trades on the job; but although he need not be able to fit up a pipe or solder a joint himself, it is essential that he should know how it ought to be done. As the plumber-work is about the most intricate in a building, a good plumber would be at least as suitable material out of which to make a good inspector as any other tradesman. Each inspector will probably know one trade better than the others, but whatever he knows best, he must have a good working knowledge of all. Confining ourselves, however, to plumber-work, the inspector must, in the first place, know his materials. He must have a good idea of quality and price, and be able to detect at once if an inferior article is substituted for one specified. He must know workmanship, too, so as to be able to tell readily whether a so-called plumber is the genuine article or a sham. In addition to that, he must have a thorough understanding of the why and the wherefore of the design, so that if any modification is necessary, he can tell at once whether a certain change will do no harm or work complete havoc with the design. If he has not this understanding, he must either hang on through thick and thin to the original design, or be entirely dependent on the plumber, which does not tend to satisfactory relations. If an inspector of this sort is superintending an ignorant plumber, the result of their joint wisdom will be interesting, if not very desirable; but even if the plumber knows well what to do, an insufficiently skilled inspector is a serious matter, especially when, as often enough happens, want of knowledge is accompanied by a firm conviction that what he does not know is not worth knowing. We are all aware that while many clerks of works are thoroughly skilled, and in every way competent, there are others whose knowledge of plumber-work is hopelessly out

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of date, and any man who is engaged in such important work may very reasonably be expected to keep himself abreast of the times.

The same qualifications, at least, are necessary in anyone who undertakes to inspect existing plumber-work, whether he is working for individual employers or as a public official. If he has to work entirely on his own responsibility, further qualifications are necessary, for then he must be able not only to see a clear specification carried out, but to make a design and draw out a specification of his own. He must have a complete knowledge of the effects of this or that deviation from what is theoretically perfect, as houses, though very similar in general features, vary almost infinitely in their details, and a man whose knowledge was mere rule of thumb would soon be hopelessly bewildered. The responsible head, whoever he may be, must have this additional qualification; but there is no reason whatever why the great bulk of the work of inspection should not be done by men whose qualifications come up only to the first standard. It would be absurd to expect the sanitary staff of a large town to be all highly-skilled sanitary experts, and in small towns it is impossible to have the exclusive service of even one, but the work of inspection should be done by men who have the qualifications of a good clerk of works, under the supervision of a skilled sanitarian, who would naturally be a permanent official in a large town, and a consulting specialist in a small one.

An inspector, however, requires other qualifications besides technical knowledge, his mental and moral qualities being not less important. He must be thorough, taking nothing for granted, and with decision to make up his mind promptly, and stick to what he knows to be right. He must have sufficient "cuteness" to detect any attempt at roguery; but while he must look into every detail as thoroughly as if he believed that every man on the job was sworn to cheat him, he ought at the same time to have sufficient courtesy and tact to keep on good terms with every good man on the job. An inspector who swears his way along, finding fault all round, has never the same influence as one who is known not to find fault unless it is well deserved, and who is as willing to commend good work as to condemn bad work. There is one point which I am sorry even to mention. There are among inspectors some, I sincerely trust very few, of the inevitable black sheep who disgrace every profession. It is not, I believe, a penal offence, but it is in my opinion a great deal worse than many things which are penal offences, for a man to accept any consideration from one whose work he has to inspect. Want of "straightness" in this respect is more fatal to an inspector that the grossest ignorance or stupidity.

Men who are appointed by architects to supervise work, by proprietors to inform them of the state of their houses, or by local authorities for the sake of public health, must be men who will command the respect of their employers by their skill, their thoroughness, and their integrity.

I have thus brought before you, in the barest possible way, the points which occurred to me as being the most important in the inspection of plumber-work, and I trust that though we may look at the subject from various points of view, we will all have the same object—that of producing work of which everybody concerned may be justly proud.

AN EXAMPLE OF BAD SANITARY ARRANGEMENTS IN NATIONAL SCHOOLS.

THE following description of bad drainage arrangements will, without doubt, prove interesting to many of the readers of the SANITARY RECORD. The defects were found to exist at St. John's National Schools in Penge, and, for some time previous to the sanitary examination of the building, various cases of illness had occurred. In consequence, the School Committee considered it advisable that the state of the drains should be inquired into.

On opening up the ground the main drain, which is some 170 feet in length, was found to have been laid, for the most part, with open joints and, at places, with a fall in the wrong direction. At each of these places a thick deposit was found.

A branch drain, in a very leaky condition, was found to pass under one of the main class-rooms only a few feet below the level of the ground.

In one of the lavatories a latrine was discovered discharging directly into a branch drain joining the top end of the main drain, and, as a matter of fact, no trap whatever existed to prevent drain gas from finding a free vent into the lavatory apartment. A very bad odour was perceived at this apparatus, and, from the very inadequate ventilation of the drainage system, it is quite possible that the latrine formed the main outlet for the drain gases. Strange to say, the latrine had only recently been fixed.

The infants' urinal was a very primitive arrangement, and consisted of a small, partially-enclosed yard, paved with porous, open-jointed bricks, unevenly laid, with scarcely any supply of water at all. The earth under the bricks had become saturated with urine, and, to make matters worse, a door opening into the school was close at hand.

The rain-water pipes were all connected directly with drains, many of them having open joints and heads terminating not far away from windows.

The supply of water to the premises, which are somewhat large, was very inefficient, the main service pipe having only a diameter of three-quarters of an inch.

The schools, after the foregoing defects were made known, were closed, and the School Committee ordered the whole of the existing arrangements to be absolutely abolished, and a properly designed modern system to be laid down. This work has just been completed at a considerable outlay, and the schools are now in a thorough sanitary condition, the most modern arrangements having been made use of.

The main drain has been made of tested pipes laid on concrete to a good fall, and in a true line from end to end, with, at necessary and convenient points, inspection manholes, provided with open and three-quarter white glazed channels for the reception of branch drains.

The manholes are built of good Portland cement concrete, floated over in cement, and covered at ground level with galvanized iron air-tight covers.

The drain is disconnected from the sewer by a proper disconnecting trap and manhole complete.

The branch drain, which had to be laid under a class-room of the school, has been totally surrounded by Portland cement concrete and filled, on completion, with water for about two days to ensure its soundness. All the underground drains have also been tested under water pressure.

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The new latrines have been obtained from Messrs. Doulton, and these are provided with large automatic flushing tanks, regulated to discharge three or four times a day. The apparatus are, with the exception of small seats, destitute of woodwork, and cleanliness can be easily maintained There are three sets of these latrines working, so that the main drain is constantly being flushed.

A special arrangement has been made for the children's urinal, consisting of a white glazed half-pipe channel laid to a good fall, and discharging into the back inlet of a stoneware gully. At the back of the channel, and at the channel ends, smooth slabs of slate have been fixed, around the top of which a perforated flushing pipe runs, while a second flushing pipe is made to discharge into the top end of the open channel, and the small yard around this arrangement is made of smoothly floated cement concrete work laid to a rapid fall in all directions towards the open channel. A small automatic flushing cistern is fixed in connection with the perforated flushing pipes, and is made to discharge at very frequent intervals. In addition to this, a special stop-cock, with hose attached, has been arranged to cleanse the yard.

The teachers' closets are of the short, flushing-rimmed, hopper pattern, supplied by three-gallon syphon-action cisterns.

The rain-water pipes have been connected to 4-inch stoneware pipe drains, collected at suitable positions into disconnecting traps with vertical pipe-shafts, terminated at ground level with open iron gratings, having provision made to prevent the entrance of stones, &c.

The rain-water drains are also provided with small access manholes for the purpose of passing rods down them, should it be found necessary at any time. This arrangement is better than fixing stoneware gullies at the foot of each pipe, in the case of a school, since it is not possible for children to play about them and remove the water, and thus open communications with the soil drains.

Special 10-gallon galvanized iron cisterns have been fixed in proper positions for drinking water only, so that there is absolutely no possibility of drain gas getting access to them. Large new supply cisterns have been fixed for the new sanitary fittings. together with a new 1¼-inch main supply pipe. The drains have also been provided with proper ventilating pipes, so that there is a free circulation of air throughout.

The school is now about to be re-opened, and it certainly cannot but give great satisfaction to the parents of the children attending it. It is of the utmost importance that the sanitary arrangements in all schools and other large buildings should be of the best possible, in order to prevent the possibility of an outbreak of disease or illness through defects.

The work has been carried out by Mr. Menear, of Penge.

THE DRAINAGE OF FLATS.

In Dr. Dudfield's last report a very striking account of bad drainage arrangements was mentioned, which, in all probability, was the cause of a case of enteric fever. The invalid, in this particular instance, happened to be a lady residing in a flat at the top of a high building in South Kensington.

The defects found in the sanitary arrangements by the district sanitary inspector were, briefly, as follows:—A water-closet had been screwed down, and the apartment in which it was fixed turned into a "larder," and on removing the wooden casings it was found that the pan was broken, that the trap under the apparatus was destitute of water, and that there was a free vent for drain gas into the "larder," thus exposing the contents to the contaminating effects of the bad gases.

Another defect worthy of notice is as follows:—The soil-pipe passing through the "larder" was made of light cast-iron, with lead connection-pieces for the water-closets, the joints of which were found to leak considerably. Various other defects of a more or less dangerous nature were discovered in other parts of the same building, which is let out in flats.

The foregoing clearly illustrates the absolute necessity for providing a means for the thorough and systematic inspection of buildings by competent persons, in order to prevent the occurrence of such lamentable cases. This inspection is the more necessary in the case of buildings split up into flats. In the first instance, however, in this particular case, without doubt, errors had been made in the actual construction of the drainage, as, for instance, the soil-pipe had been imperfectly constructed either through ignorance or economy, most probably the latter. This pipe, in any case, should have been made throughout of heavy lead, with wiped joints, placed entirely outside the house if possible, and, if not possible, it should have been tested at the outset under severe water pressure, in order to reduce to a small degree the risk of leakage at a future date.

At the same time, a very serious mistake was made by the occupier in causing the seat of the closet to be screwed down, so that the apartment might be used for other purposes, and, above all things, a "larder." The water in the trap would, of necessity, dry up through evaporation. The connection between the trap and the soil-pipe should have been effectually cut off and soldered up, in which case drain gas could not have found an exit from the water-closet as it did. In the very unsatisfactory condition of sanitary affairs at present in the way of absence of proper sanitary legislation and the proper and systematic inspection of houses, every person, before entering a house, should employ the services of a competent professional engineer or specialist to examine the drainage, thus making the individual aware of any existing defects, after which arrangements could be made to have them altered before entering into occupation. This provision, at present, is the only one that can be resorted to, but there is a great need for the organization of a special sanitary branch, under the control of Government, for the putting and maintaining houses in a sanitary condition, and it is to be hoped that ere long such measures will be taken.

It is very desirable that owners of mansions and large buildings should place themselves into the hands of proper sanitary experts to see to the state of the drainage, and certify the same from time to time, having periodical examinations made and suitable tests applied to discover defects that are likely to take place as time goes on. Such a system of working is carried out in this manner by several associations at very moderate charges, and also by many private engineers.

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THE INSANITARY CONDITION OF BILLINGSGATE.

THE question of providing London with better, more salutary, and more commodious markets, is, like many other necessary reforms, nearing completion, although it may still be doubted by many whether larger and better ones are required. To satisfy doubters on this point, they need only investigate matters at Billingsgate and they will soon observe how much room there is for improvement and reform. The first objections that are apparent on visiting Billingsgate fish market are its insignificant and insufficient Thames frontage of only about 160 feet; its diminutive market area, its insufficient, congested, and obstructed road and river approaches; the narrowness and shallowness of the Thames opposite Billingsgate. Moreover, the Thames traffic is being further obstructed by the new Tower Bridge works, which, when completed, will make matters still worse at the fish market, by causing additional blocks about and above the Tower Bridge. The Tower Bridge is planned so that the central arch is a draw-bridge in order to enable big ships to pass through, thereby putting a stop to carriage road or river traffic for an uncertain time. Foot passengers, however, will be able to cross at a higher level above the draw-bridge whilst it is being opened. Barges and small craft will be able to pass through the Tower Bridge without necessitating the draw-bridge being opened.

By a police law of the corporation all fish-carts, vans, vehicles and barrows must be removed from the adjoining and surrounding streets of Billingsgate market by half-past nine in the morning; and by the same law ships with cargoes of fish must not unload after nine in the morning. Again, no steamer of more than 130 tons is said to be able to unload at Billingsgate, and even then at low water the steamer not unfrequently gets stuck on the soft mud and silt of the Thames. The market has only an area of 39,000 square feet, or considerably less than an acre, and this for a supply of fish to 10,000,000 persons, for that is the estimated population at home and abroad now drawing fish supplies from the metropolis.

In addition to its inadequate size and inconvenient situation, the structure and internal fittings are nothing more nor less than a disgrace. Instead of all of the internal fittings being made of glazed, varnished, non-porous, non-absorbent materials, most of them are substances highly absorbent, which breed every form of germ, bacteria or microbe, specially active in starting and accelerating the decomposition or putrefaction of any dead fresh fish which may be in the market. The stalls, too, are bacterial traps, for they are of unvarnished, porous, soft wood, rough and uneven from wear and tear, and the walls are of porous bricks instead of being of glazed bricks or tiles. The present floor is composed of a porous soft stone, so worn and uneven, that its pavement is a honeycomb of filth-pools, and here may be seen not only fish-heads and bits of fish, but often the fish full of blood and entrails, more or less decomposed and decomposing, as well as fish on sale totally unfit for human food.

Fish salesmen have to pay from 6d. to 9d. a week for occupying each square foot of space, and it is therefore only right that they should be provided with a better place. Even if Billingsgate still remains as a market, the sanitary condition will have to be considerably changed. At present the market is outside the jurisdiction of the London County Council, and possibly, too, outside the jurisdiction of the Public Health Acts of England, so that selling there poisonous, diseased, or putrid fish for human food would not be punishable by fine or imprisonment in spite of and in defiance of the ordinary laws of the country. Notwithstanding the supervision of the Fishmongers' Company in London and its suburbs, fish is sold as human food which ought to have been condemned and seized. Indeed, their inspection of fish is nothing less than a farce. Some startling revelations as to the state of affairs came out in the evidence before the House of Commons in 1882, on the London Riverside Market Bill, when it was acknowledged that railway-borne fish was in a very rotten state, and that diseased fish is sold very cheap. Frequently fish is kept back, which, rather than sell, the Billingsgate salesmen destroy, and so, by reducing the supply, keep up the price of fish. If the fishermen send in a large quantity of cod, for instance, and the salesmen do not want to reduce the price of cod, they keep it over for three, four, or five days, and then intimate to the inspector that there is a quantity of bad fish, and he comes down and condemns it. Through fish being sold and re-sold by various rings or combinations within the market, undue illegitimate profits are made to the injury of the fishermen and the public. By an Act passed in the reign of Queen Anne, it was rendered illegal to sell fish more than once within Billingsgate Market or within 150 yards of Billingsgate Dock. It would be well if this Act were re-enforced. In the days of Edward I., regrating or re-selling fish was distinctly forbidden. The Report of the Royal Commission on Fisheries in 1866 showed that the consumer for prime fish paid 400 or 500 per cent. above the price paid by the fish dealer to the fisherman, who received only 3d. or 4d. per lb. at Billingsgate, for which the retailer charged 1s. to 1s. 6d. In case of the common or coarser kinds of fish food for the poor, this rate is still higher. There are many other illegal practices carried on, such as mortgages on uncaught fish for example, all of which require a thorough investigation and checking.

Perhaps if the apathetic Londoner would bestir himself in assisting in the carrying out of such a reform, he would amply reap the benefit in having cheaper fish for his table, which at the present time has to be banished from many households on account of the price. The majority of fish is dearer than butcher's meat, and yet there is not the outlay on rearing it that there is on cattle and sheep. Moreover, it is an invaluable article of diet, and it should be within the reach of all to have it as often as possible and as fresh as possible. Fish inspectors will be requisite, duly trained and competent experts, before much in the way of stopping the illegal practices can be accomplished, and these it is intended to appoint as soon as the London County Council can exercise their authority in the matter. In the meantime, the market is a disgrace to the metropolis, and its present condition tends, by the putrefactive bacterial contagion, to spoil any unspoilt dead fish which may chance to be on its premises.

COWS OF ALL WORK.—The following specimen of "English as she is spoke" comes from Nice: "Milk, Butter, Cream, Eggs. The great dairy of Cannes.—Pierre Lanterri, route d'Antibes, near the passage à niveau, Avenue de l'Hotel Windsor.—35 fine cows provides at all times of the day *milk, cream, butter, and also new laid eggs*. Warm milk every day at 4 P.M."

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THE
SANITARY RECORD.

The Organ of the Association of Public Sanitary Inspectors of Great Britain, and of the National Association of Sanitary Inspectors.

FEBRUARY 15, 1890.

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The Editor will be glad to receive, for publication, announcements of meetings, reports of proceedings, and abstracts or originals of papers read at meetings of Medical Societies of Health, Public Analysts, and Sanitary Inspectors' Associations, &c.

Medical Officers of Health, Public Analysts, Town Clerks Local Board Clerks, Sanitary Surveyors, and Inspectors, are requested to send Notices of Appointments and Vacancies to the Editor, care of Messrs. W. H. ALLEN & Co., 13 *Waterloo Place, S.W.*

THE SANITARY RECORD will in future be published by Messrs. W. H. ALLEN & Co., 13 Waterloo Place, S.W. All matters relating to the literary portion of the Journal, and all exchange journals, periodicals, books for review, and new inventions, should be addressed to the EDITOR at above address. All business communications relating to Advertisements, Subscriptions, &c., to be addressed to the MANAGER at the same address.

TUBERCULOUS MILK.

DR. HAROLD C. ERNST, of Boston, Massachusetts, has been making a series of experiments on the infectiousness of milk from tuberculous cows. The research has been under the auspices of the Massachusetts Society for the Promotion of Agriculture, and the results are well worthy attention of all interested in the solution of public health problems. Whatever Professor Koch may teach now, it is not long since he wrote, "If infection is to take place, the milk must contain tubercle bacilli, and this appears to be the case only when the milk-glands are affected." This and similar opinions expressed from time to time by competent authorities have done much to lull the public into a sense of false security as to the communication of tuberculosis by means of infected milk. Dr. Ernst's investigations are certainly calculated to put an end to such false security, and to give timely warning of a danger that menaces all who make use of uncooked milk as food. The experiments were made at a farm, under favourable conditions. The more important were as follows:—Many samples of milk from 36 different cows were prepared for microscopical examination. All of the animals presented more or less distinct signs of tuberculosis of the lungs or elsewhere, but none had marked signs of disease of the udder of any kind. In the samples of milk from 10 animals, bacilli were distinctly present; that is to say, infectiousness was detected in 27·7 per cent. Doubtless the presence of bacilli would have been discovered in a still greater proportion of cases had more samples of the milk been submitted for examination. The results, at least, establish the fact that milk coming from animals without indication of disease of the udder may be infected. Dr. Ernst next inoculated rabbits and guinea-pigs with milk or cream from the same cows. Out of 49 rabbits properly operated on, 5 were made more or less tuberculous—just over 10 per cent. Out of 54 guinea-pigs properly operated on, 12, or rather over 28 per cent., were infected.

It may be said that Dr. Ernst is not breaking absolutely new ground in these investigations, and this is so. Still, any fairly conducted series of experiments, whether they furnish the basis for a new truth or give additional support to a truth not yet fully recognised, are welcome. At present the action taken by sanitary authorities to protect the public against tuberculosis from infected food is somewhat anomalous. The celebrated case decided at Glasgow last summer by Sheriff Berry has drawn the attention of medical officers of health throughout the kingdom to the propriety of preventing the sale for human food of carcases of animals infected, even in a comparatively slight degree, with tuberculosis; and accordingly orders to destroy such carcases are being applied for and obtained almost daily. However, as regards dairy cows, that a large number are tuberculous is admitted, and important evidence on this point was laid before the Departmental Committee which sat in London in 1888, one of the witnesses stating that about 30 per cent. of the cattle kept in Glasgow and Paisley were affected with tuberculosis; yet nothing is done to check the sale of milk from such cows. Indeed, it would appear that nothing can be done. One of the members of the committee, when the evidence cited above was given, asked what happens to those cows. "They are there still." was the reply. "Was there nothing done?" The answer given was—"There was not power to do anything but grumble, and go on." This is the position not only in Scotland, but in England and Ireland. Thus sanitary authorities can and do prevent the sale for human food of the meat of tuberculous cattle, often when the disease is in an early stage and limited in extent, although the risk of infection after the meat is cooked (as it always is before being eaten) is but small. But, on the other hand, sanitary authorities do not and cannot prevent the sale for human food of the milk of tuberculous cattle, though the risk of infection, inasmuch as milk is for the most part ingested raw, is undoubted and considerable. Such an extraordinary state of the law one would think only needed pointing out, and it would be amended. Assuredly this defect has been pointed out before, but nothing has been done in the way of providing the required power. The power to seize unsound milk given to health officers and inspectors, and the power to order the destruction of the same given to justices in secs. 116 & 117 of the Public Health Act, is of no use at all as regards tuberculous milk. The same may be said of similar powers in corresponding Acts.

We use the occasion of noticing Dr. Ernst's experiments to bring this matter again before the Legislature and the public

LICENCES FOR SLAUGHTER-HOUSES.

THE decision in the case of Schussler *v.* the Corporation of Bradford, tried before the Recorder of Bradford last month, depended on the meaning of the words used in a Local Act of Parliament, applicable to Bradford only; but is of importance, as many other towns are regulated by private Acts, which contain similar, though probably not identical, provisions. It has been recognized for some time past that slaughter-houses, situated in the neighbourhood

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of dwelling-houses, are liable to become nuisances and injurious to health; and public abattoirs, situated in proper localities, are considered to be preferable to private slaughter-houses. Most towns, however, contain private slaughter-houses, which have been in existence for many years, whose owners have expended capital in making them fit for use as slaughter-houses, and have, therefore, a vested interest in keeping them where they are. These vested interests are respected by Parliament. The Public Health Act, 1875, repeating the words of earlier Acts, empowers urban sanitary authorities to provide public slaughter-houses if they think fit, and also enables them to regulate the use of private slaughter-houses, and to license those which are fit for the purpose. No new building may be used as a slaughter-house unless licensed, but places used as slaughter-houses previously to the passing of the Local Government Act, 1858, cannot be refused a licence unless conducted improperly. The powers given by the Bradford Local Act of 1868 are somewhat to the same effect. The Corporation are empowered to grant annual licences for the use of premises as slaughter-houses, and to revoke or suspend any licence when, in their judgment, the premises are a nuisance or not suitable for a slaughter-house or knacker's yard. Mr. Schussler's premises were used as a slaughter-house prior to the year 1858, and in 1860 plans for their alteration were approved by the corporation. This approval, being, in effect, a licence to erect a slaughter-house, amounted in law to a licence to use it when erected, and no annual licence was ever asked for or granted, but the premises were registered, and continued to be used as a slaughter-house down to the autumn of last year. The corporation, in the meantime, had erected public abattoirs, and, desirous of making the butchers use them, had gradually been suppressing the private slaughter-houses, by declining to renew their licences. In October last year they revoked the licences of certain premises, including Mr. Schussler's, and against their revocation he appealed to the Court of Quarter Sessions. On the hearing of the appeal a great deal of evidence was given on both sides as to the condition of the premises, and their suitability for use as a slaughter-house. In the result, the Recorder came to the conclusion that no nuisance was proved to have arisen from the use of the premises, and that they were structurally not unsuited for a slaughter-house; and, consequently, he over-ruled the corporation's revocation of the licence, and gave judgment for the appellant, Mr. Schussler. As regards the correctness of his conclusions on the facts we can offer no opinion; his legal view, that on the words of the Act he had only to consider the suitability of the premises themselves, apart from their surroundings, seems to be correct. The case shows the difficulties in which sanitary authorities are often placed. No doubt the corporation, acting for the interests of the inhabitants of Bradford, thought it desirable to get rid of a slaughter-house, which was closely surrounded by dwelling-houses, and which, in the opinion of many of their witnesses, was at times a nuisance and likely to be injurious to health; but they find themselves unable to suppress it. They can, of course, buy it up if they choose, but the expense of so doing would probably be prohibitory. Offensive trades must be really offensive, and nuisances serious, before our law will inflict on those who carry them on the serious loss caused by removing an established business to another locality. The fact that it is so difficult to refuse to renew a licence, once granted, should make local authorities all the more careful not to grant them in cases where there seems to be a possibility of the trade, when established, becoming injurious to the community. Vested interests must be respected, but there is no necessity for allowing trades which may be offensive to be newly established in populous districts.

THE METROPOLITAN SANITARY LAWS.

THE inclusion in the Queen's Speech of a promise that "Bills for the consolidation and amendment of the laws with respect to public health in the metropolis, and to the dwellings of the working-classes," are to be laid before Parliament, is very satisfactory. Mr. Ritchie, the President of the Local Government Board, has already forwarded to the district boards and vestries in the metropolis, to the London County Council, and to other bodies immediately interested drafts of the Bill which he has prepared for the consolidation of the laws governing the sanitary administration of London, and has invited observations and suggestions. It would seem, therefore, that the Government contemplate pushing this matter forward during the present session if they receive sufficient encouragement to do so. Having regard to the present chaotic state of the metropolitan sanitary laws, the proposed consolidation will be welcomed. There are upwards of 100 Acts of Parliament, great and small, at present in force containing legislative provisions relating—some more, others less directly—to public sanitary administration in London; and it should also be remembered that the revised Public Health Act of 1875 does not apply to the metropolis, which, except for the Metropolis Management Acts, has to be content with powers scattered, in perplexing confusion, through the older and less perfect Nuisances Removal Acts, Sanitary Act, 1866, Public Health Act, 1872, &c. The new Consolidation Bill aims at simplying the metropolitan sanitary law, and rendering it intelligible to the ordinary householder as well as to the expert. The Bill will, however, need careful consideration, and we trust that the discussion of its provisions will be kept free from any taint of party politics. The protection of the health of the community should be dealt with on its merits. Let us have, therefore, the best Act that the maturest experience can devise. We feel confident that Mr. Ritchie will give an unprejudiced attention to any suggestion made to him with this object without regard to the political party from which it may emanate.

BETTERMENT.

THE proposal of the London County Council to charge part of the cost of their intended Strand improvements on adjacent property, which will derive benefit from them, has naturally provoked a good deal of discussion. In our last month's number, at page 328, we published an abstract of what the Bill proposes to do, without in any way discussing its merits. The *Times*, on January 27, contained a most instructive article pointing out what has been the course of legislation with reference to the payment of compensation for lands compulsorily taken for public improvements. The writer shows that till within the last few years compensation was payable only in cases where the owner or occupier of the lands taken could have maintained an action for tres-

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pass, if the public body had not had Parliamentary powers to enable them to interfere with the land, and that it was then estimated somewhat as if damages for trespass were awarded. Cases, consequently, were of frequent occurrence, in which owners and occupiers sustained very heavy loss by reason of the construction of public works, without having any right to compensation; while the property of others became enhanced in value without their having to contribute to the works which indirectly conferred the benefit. Latterly, however, this rule has been somewhat altered. First the rule, which, without Parliamentary sanction, had grown up in practice, of giving to those interested in property taken compulsorily a bonus (usually of 10 per cent.), in addition to the value of their interest, by way of payment for being deprived of their property, was expressly abrogated by the Artisans' and Labourers' Dwellings Improvement Act, 1875, 38 & 39 Vict., c. 36. Section 19 provides that compensation shall be estimated upon the fair market value of the lands, &c., *without any additional allowance in respect of compulsory purchase*. The landowners whose property is taken under this Act are consequently fined 10 per cent. on the purchase-money of their property; but it must be remembered that in theory the right to take the property only can be exercised in cases where the houses are unfit for human habitation, and where, consequently, the owners of the property have in some measure forfeited their rights over it. The Artisans' Dwellings Act, 1882, 45 & 46 Vict., c. 54, sect. 8, went further, and enabled local authorities in certain cases to charge part of the cost of the demolition of an "obstructive building" as defined by that section on neighbouring buildings whose value would be enhanced by its demolition. This section contains the germ of the scheme now promulgated by the London County Council, for it undoubtedly enables a local authority, in cases which come within its purview, to charge the cost of improvements undertaken by it on the owners of property not directly involved in the improvement scheme. It must, however, be remembered that the section is limited in its operation. It applies only to cases where the local authority has put the Artisans' and Labourers' Dwellings Acts in force, and where, therefore, the property dealt with is presumably in a condition or position detrimental to health. The proximity of such property almost necessarily diminishes the value of other property adjoining, and its removal must cause that value to rise. Parliament has thought it right that in such cases the increased value should not be given to the owners of the property so situated, but that they should purchase it by contributing to the cost of the works which improve the value of their property. The powers given by the section in question have, we believe, been very little used, and the public have consequently hardly any knowledge of their practical working. The London Bill proposes to give the county council similar powers, but to apply them to circumstances very different from those under which alone the Act of 1882 can be put in operation. The widening of the Strand is required, not because the premises adjoining it are insanitary, but because the thoroughfare is inadequate to accommodate the stream of traffic which selects that route. The work is a much-needed public improvement; and from its execution, not the immediate neighbourhood only, but the whole metropolis will derive a benefit. When the work is completed, it is probable that property adjoining the widened street, especially where by the widening it acquires a frontage which it has not got at present, will be considerably enhanced in value. Whether any property not immediately adjoining will benefit seems more doubtful. The county council propose to schedule all the properties within a certain area as likely to benefit by the improvements to be executed, and to charge on those properties a portion of the cost of those improvements. In many instances, there will probably be a considerable difference of opinion whether particular premises will derive any, and, if so, how much, benefit from the proposed works. These questions will, of course, have to be determined, as such questions now are, by arbitration or a jury. In some cases, however, it will probably be admitted, and in others it will ultimately be decided, that adjacent property will be increased in value by reason of the execution of the improvement works. In such cases the proposal of the council seems fair in principle, assuming that the amount of charge and its incidence on various persons can be properly adjusted. The recognition of the principle that owners of property are to be charged with the cost of works undertaken, not by them or at their request, but in spite of them, and for the benefit of the locality in which their property is situated, may seem to derogate from their rights of ownership. But the only novelty is in the application of an already recognised principle to a new state of things. Owners of real property have long been liable to have it taken from them for objects deemed by Parliament to be public; and, as we have shown, have in certain cases been liable for some time past to have it taken at its bare value, without getting any compensation for being deprived of it against their will. In towns they have also now for many years been liable to charges for the construction of works of public utility, such as providing sewers or making new streets. In such cases, the whole cost of the work is chargeable on the properties adjoining, although the inhabitants of other parts of the town derive some benefit from it. The proposal of the London County Council, in effect, is to treat the owners and occupiers of property in the neighbourhood of the Strand in a similar manner to that in which the owners and occupiers of property adjoining a new street have long been treated. To the extent to which it can be shown that their property will increase in value by the improvement of the thoroughfare, they will be no sufferers by the imposition of the charge, and will have no greater reason to complain than owners of house property in other towns, except in one respect. The liability in respect of property adjoining new streets is well known, and the value of houses or land so situated is calculated with reference to this liability. In old thoroughfares like the Strand there has been no such liability, and purchasers have for many years invested in property adjoining them, on the faith of their not being liable to the imposition of any fresh burdens. Unless the proposed charges should be so adjusted as (including all necessary costs) to be no more than the increase in value of the premises charged, those interested in such property will have a good right to complain. We assume, however, that Parliament will take care that the Act is so worded as to protect vested interests; and if this is done, we think the proposal of the county council is one to which objection cannot fairly be taken.

THE WEIGHTS AND MEASURES ACT.

THE Weights and Measures Act which came into force on January 1, 1890, will involve several new

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duties upon county councils, and its provisions will, therefore, require full and careful consideration. It will be necessary to settle the principles upon which the permanent administration of the Act should be carried on, and also to settle the provisional arrangements until the permanent scheme can be brought into operation. Under the Act of 1878, the principal provisions at present in force are:—

1. That the council, as local authority, is required to provide local standards of measure and weight for the verification and inspection of all weights and measures in use in the county, and to fix places at which such local standards are to be deposited.

2. They must appoint inspectors for keeping the local standards, and for other duties.

3. They must fix the times and places in the county where each inspector has to attend.

4. Each inspector may inspect all weights, weighing instruments, and measures on any premises in his district, or in the possession of any person for use for trade; he may seize and detain such as are found to be defective, and he may enter any place where he has cause to believe that any such weights, measures, or weighing instruments are used for the purposes of trade.

Under sect. 53 of the 1878 Act, the local authority has power to make bye-laws regulating the verification and stamping of weights and measures, and of generally regulating the duties of inspectors. This power does not, however, appear to have been exercised by the justices in any of the districts now forming the county of London.

The Act of 1889 makes important additions to the duties of local authorities. The verification and stamping has hitherto applied to weights and measures only, and not in any way to scales or other weighing instruments. This omission is rectified in the first section of the new Act. The new Act is composed of four different parts, and the chief provisions of the Act are as follows:—

1. That every weighing instrument used for trade must be verified and stamped.

2. After January 1, 1891, no unstamped weighing instrument may be used for trade.

This provision allows one year, it will be noticed, for the verification and stamping of weighing instruments in use for trade. The Board of Trade is required to hold examinations and grant certificates of competency to inspectors, and after January 1 next, no new inspector may be appointed who does not hold this certificate; but the examination is permissive so far as existing inspectors are concerned and not obligatory. Fees are to be charged for all verification and stamping, according to a scale in a schedule in the Act.

The second part of the Act deals with coal, and, under the new Act, all coal is to be sold by weight only, except where, by the written consent of the purchaser, it is sold by boat-loads or by waggons, or tubs, delivered from the colliery into the works of the purchaser. If over 2 cwts. of coal is delivered by vehicle, it must be accompanied by a ticket disclosing the nett weight of the coal to be delivered. Coal sold in bulk is to be weighed when sent out, as well as the vehicle which contains it, unless the vehicle is provided by the purchaser; the true weight of the vehicle is to be marked on it in whatever way the local authority desires, and this will also have to be accompanied by a ticket, showing the correct weight of the coal, as well as of the vehicle which contains it. Where coal is sold by retail for delivery, the seller will have to keep at the place of sale and delivery a verified weighing instrument. The local authority will be able to erect fixed weighing instruments at convenient places for weighing coal, and can provide and maintain sufficient portable instruments for the same purpose, and may appoint proper persons to keep and attend such instruments. An inspector, or other appointed officer, may enter any place where coal is kept for sale, and may stop any vehicle with coal for sale or delivery, and test the weights and weighing instruments, and may weigh such coal. These provisions in regard to coal are of the utmost importance in view of the startling disclosures of frauds which have recently come to light, and it is hoped they will, to a great extent, put an end to them.

The third part of the Act deals with the sale of bread, which, as here amended, only requires that all bread, except French or fancy bread or rolls, shall be sold by avoirdupois weight, when so requested, by or on behalf of the purchaser, and that bakers shall provide scales for this purpose.

Under the Bread Acts, no local authority is appointed, and should the county councils' inspectors enforce the provisions of those Acts, they will be in the position of common informers. Unless, however, the Acts are enforced by the inspectors, they will be practically inoperative.

The existing offices for the verification and stamping of weights and measures are quite inadequate in the majority of cases, and are often in unsuitable positions. In London, it is suggested that the county should be divided into 14 districts, each having a distinguishing number or mark, and, as far as possible, the district is to be arranged on the basis of population. Naturally a larger amount of work will fall upon certain offices situated near to the premises of the manufacturers and vendors of the weights, measures, and weighing instruments.

A rough estimate of the cost of the working of the Act has been worked out by the London County Council, and it is thought that the cost will be more than covered by the income that will arise from the fees and charges that the council are required to make for the stamping of weights, measures, and weighing instruments, and for the use of weighing appliances in connection with the supervision of the sale of coal, and there will also be a considerable income from the new work of stamping weighing instruments. Then, too, there will be the amounts of fines under the Act, which do not, in any case, exceed £5. These various sources of revenue will, it is thought, exceed in the aggregate £10,000 a year.

"Weighing instruments" in this Act includes scales, with the weights belonging to them, balance, spring-balances, steelyards, scale-beams, weighing machines, and other instruments for weighing; "measuring instrument" includes any instrument for the measurement of length, capacity, volume, temperature, pressure, or gravity, or for the measurement and determination of electrical quantities; "vehicle" means any carriage, cart, waggon, truck, barrow, or other means of carrying coal by land, but does not include a railway truck or waggon.

One point in the Act is likely to cause dissatisfaction among purchasers of coal, and will, moreover, stay them from having their coals weighed. The section referred to is "where the purchaser requires the coal to be weighed, or re-weighed, and it is found to be correct, such purchaser shall be liable to reasonable costs."

The Board of Trade is empowered to make in-

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quiries with respect to the local administration of the Act, including the condition and equipment of the offices. In London, it is proposed to have a chief inspector, appointed at a salary of £500 a year, in order to obtain the equal administration of the Act throughout the whole of the county, and to have a proper supervision of the various inspectors. The statutory duties imposed on the inspectors are onerous and responsible, and require considerable technical knowledge and skill to be carried out properly.

It is intended to divide these into two classes, the first class consisting of six of the older and more experienced officers, appointed at a salary of £300 a year, whilst the second class, composed of eight inspectors, shall receive £250 a year each.

In Ireland the local authority is the grand jury, and there the Act is to come into operation on May 1.

OPEN SPACES.

THE Metropolitan Public Gardens Association has issued its seventh annual report, and it is evident that its activity springs from some other basis than that of "funds," for, notwithstanding a diminution in the income of 1889 over that of 1888 of about £6,000, the record of the year's work is as good as ever.

Myatt's Fields, a park of 14½ acres in Camberwell, has been completed, handed over to the London County Council, and opened; Barnsbury Square, N., St. Clement's Garden, Fulham, and the large parish churchyard of Greenwich have been laid out and thrown open; seats have been put in public thoroughfares in Bromley, E., Paddington, W., and Putney, S.W.; trees have been planted in streets in East Ham, West Ham, Putney, Bayswater, and the City; grants have been made to several public gymnasia and public gardens, and to one swimming-bath; flower-stands and shrubs have been placed in Trafalgar Square and at Piccadilly Circus; open spaces have been secured in Hammersmith, Notting Hill, and Starch Green; and several very successful efforts have been made to induce the respective authorities to save and reserve other spaces where new buildings or railway lines have been sanctioned.

In no direction is the work of the Association more to be commended than in its influence upon such bodies as the London County Council, the School Board, the Government, the Ecclesiastical Commissioners, and the members of Parliament, and while the money that comes in is directly spent in adding to the open spaces, trees, seats, &c., in the metropolis, a great deal of the energy of the Association is expended in promoting less directly, but quite as effectually, the cause for which it exists. A constant watch is kept in the interest of open spaces, bills are opposed in which such spaces are threatened with partial or total annihilation, and at the time of the printing of the report, several very important "fights" were being maintained. The successful opposition of the Association to the provisions of the Midland Railway Bill "led to a most important principle being laid down by the Committee of the House, and confirmed by Parliament—that when a portion o. an open space is compulsorily acquired, another space must be provided in exchange, not less in area and fully equal in value."

The information contained in the report respecting all the open spaces in London, and the Acts which affect them, alone makes it a most valuable pamphlet, and one which should be possessed by all who are working, or wish to work, in this direction.

NOTES OF THE MONTH.

PENALTIES FOR ADULTERATION.

WE have before now had to call attention to the absurdly small fines which some magistrates impose in adulteration cases. A batch of such cases were recently disposed of by the Hereford Bench, and in each of these, as reported, the defendants were all convicted; and, so far, the result was satisfactory to the authorities who instituted the prosecution. But the fines imposed were such as to show that the magistrates considered the offences proved to be venial. In one case especially the analysis showed that the beverage sold as milk contained 32 per cent., or almost one-third of the total quantity, of added water; yet the magistrates deemed a fine of 30s. and costs a sufficient punishment. It should be remembered that vendors of adulterated food are not easily or frequently detected, and that they probably palm off their spurious wares on dozens, if not hundreds, of people before they are made amenable to the law. Every sale of watered milk, or any such substance, is a fraud, and the dealer who obtains the price of the genuine article which he does not supply is guilty morally of stealing, just as much as if he took the money out of his customer's pocket. A course of such dishonest trading will soon enable him to pay an occasional fine of a few shillings, and still leave a very handsome profit. The imposition of such fines really amounts to an encouragement of fraud. The sooner magistrates realise this fact, and set themselves to enforce the law by the imposition of substantial penalties calculated to deter offenders from repeating such offences, the better for the public who live within their districts. The mistaken leniency of which we complain is not universal, but many magistrates seem afraid to punish men who cheat under the guise of an apparently respectable trade.

NON-REMOVAL OF HOUSE REFUSE.

THE old grievance, that dustmen will not do their work and remove household rubbish unless specially paid to do so by the householder, has again come to the fore, and the *Times* has published a good many letters on the subject. A correspondent signing himself "M." has pointed out that in London, scavengers who fail to do their duty are liable to be fined by magistrates. For the benefit of our readers we give verbatim the material parts of the section in question, 18 & 19 Vict. c. 120, s. 125: "It shall be lawful for every vestry and district board, and they are hereby required, to appoint and employ a sufficient number of persons, or to contract with any company or persons, for the sweeping and cleaning of the several streets within their parish or district, and for collecting and removing all dirt, ashes, rubbish, ice, snow, and filth, and for cleansing out and emptying of privies and cesspools, sewers and drains, in or under houses and places within their parish or district; and if any such company or person fail in any respect properly to execute and perform such works and duties, such company or person shall for every such offence forfeit a sum not exceeding £5." It is clear, therefore, that a dustman who neglects or refuses to remove refuse, in the hope of getting a fee to induce him to do his work, renders himself liable to a fine instead. A few prosecutions might make the contractors and their men aware of their position, and improve their mode of doing their work considerably. The Act

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above quoted applies only to the metropolis. In the rest of England similar powers and duties are given to local sanitary authorities by secs. 42–44 of the Public Health Act. Under it "every local authority may, and when required by the Local Government Board *shall*, undertake or contract for the removal of house refuse from premises, and the cleansing of earth-closets, privies, ashpits, and cesspools." Where they have so undertaken or contracted, and fail without reasonable excuse to perform their duty after notice in writing from the occupier of any house within their district, they become liable to pay to such occupier a penalty not exceeding 5s. for every day during which their default continues. No specific penalty is imposed on a defaulting contractor, but the local authority can, of course, provide by its contract that he is to hold them harmless from all penalties incurred by reason of the negligence of himself or his men. In cases where the local authority do not themselves undertake or contract for these matters, they may make bye-laws imposing the duty of cleansing or removal, at such intervals as they think fit, on the occupiers of premises within their district, and can, of course, impose a penalty on such occupier for non-compliance with the bye-law. In populous districts, these duties can only be properly discharged by the local authority. In such cases, aggrieved householders have a remedy, though rather an inadequate one, if refuse is not removed. If they will not use the remedies provided by law, they must not blame other people for what is then their own fault.

DIPHTHERIA IN KENSINGTON.

In a brief summary of the vital statistics of 1889, Dr. T. Orme Dudfield shows the year to have been very favourable to the inhabitants of Kensington. The death-rate was only 13·5 per 1,000, which is the lowest on record, being 2·9 below the decennial average, and 3·9 below the rate in the metropolis as a whole. The deaths from zymotic diseases, which were 280, 416, and 420 in the three previous years, were 268 in 1889, and 114 below the corrected decennial average. This is equivalent to a rate of 1·5 per 1,000. Diphtheria was the most serious epidemic, and caused 110 deaths—a marked excess. The birth-rate was low (20·8 per 1,000), and the rate of infant mortality much less than in immediately preceding years.

HEALTH OF MANCHESTER.

Dr. John Tatham, the recently appointed Medical Officer of Health for Manchester, has entered vigorously upon his new duties, and seems determined to leave no stone unturned whereby the excessively high rate of mortality for which Manchester has long been unenviably notorious may be reduced. The difficulties with which he has to contend are considerable, but there are some important directions in which improved sanitation will doubtless be effectual. The local rivers are filthy, the staff of inspectors is scarcely sufficient to secure such constant supervision as will prevent unwholesome accumulations and promote general cleanliness, there is much overcrowding in some wards, and the air is unduly poisoned by smoke. Much good will doubtless follow the completion of the gigantic sewerage scheme now in hand, and also the completion of the new water service from Thirlmere. Dr. Tatham has adopted one useful method of instructing the public on these matters by issuing a "Weekly Health Return," showing the state of public health as disclosed by the vital statistics, the sanitary proceedings, and any other matter affecting the health of the city. This return is to be distributed, and is also to be deposited, for public inspection, at each of the Free Libraries and Public Reading Rooms, together with a chart showing the local prevalences and general distribution of infectious sickness in the city. The returns which have already been issued show that the weekly death-rate since the beginning of the year has varied between 26·9 and 33·8 per 1,000. Scarlet fever seems to maintain its hold upon the town, and diphtheria also lingers there. There have been "influenza colds," but the much-dreaded outbreak of influenza has not appeared in Manchester in an epidemic form.

UNSOUND MEAT.

In a note on page 354 of our last month's issue, we stated that a case at Derby, in which a man was fined for exposing for sale a cow which was unfit for food, was, as far as we knew, the first in which anyone had been convicted of such an offence in respect of a live animal. We find that there have been other similar convictions; but we still think that it is not generally known that the law is able to reach such offenders, and, consequently, think it desirable to give publicity to the fact that such a conviction was obtained, and a moderately substantial fine imposed. We hope other magistrates, on proper occasions, will do likewise.

DISUSED BURIAL-GROUNDS AS OPEN SPACES.

The work of the London County Council in regard to parks and open spaces still continues to grow apace. The latest departure is the proposal to utilize the disused burial-grounds in North, South, East, and West London, as well as in the City, for recreative purposes. In the City alone, there are 68 churches, whilst the grounds in other parts of London proposed to be thrown open number some hundred and twenty, and are of all denominations—Roman Catholic, Protestant, Wesleyan, Jewish, and Quaker. Amongst these are St. James's, Piccadilly, St. Clement Danes', Strand, Chelsea Hospital graveyard, Greenwich Hospital burial-ground, Hammersmith Convent burial-ground, the Swedish Church, Prince's Square, St. Saviour's, Southwark, Christ Church, Blackfriars, &c.

LONDON AND THE COMPLETION OF ITS SCHEME OF GOVERNMENT.

Some singular incongruities in regard to certain powers have come to light during the existence of the London County Council, and a sub-committee is now busy considering the completion of the scheme of London Government, in order to obviate the complexity of affairs. For instance, the relation between the council and the vestries and district boards is confused and obscure. There seems to be scarcely any function of either which does not intermingle with and infringe upon some function of the other. The licensing of cow-houses is vested in the council, but the control of pig-styes, appears to be a matter for the vestries. The detailed inspection of offensive businesses is now a matter for the council, but it seems to be no more important or general in its character than many sanitary duties now committed to

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vestries. The numerous recent Acts relating to diseases, nuisances, offensive businesses, dairies, bakehouses, and health generally give powers almost promiscuously to the council, the vestries, and the Local Government Board, with but little attempt to distinguish between the proper functions of each authority. It is known that it is proposed to have district councils, which shall have transferred to them the duties of the present vestries and district boards, but their duties are framed on no regular plan, and are contained in a long series of confused Acts of Parliament passed as each subject pressed for solution, so that there will be considerable difficulty in laying down the constitution of the new district councils. The questions which await solution with the completion of the scheme of London Government are legion, and the existing bodies at present dealing with them are numerous. There are the Metropolitan Asylums Board, the Sick Asylum District Committees, the Boards of Guardians, the Water Companies, the Gas Companies, the Thames Conservators, &c. &c., so that the problems are not easy ones to solve, when there are 18 different bodies to be consulted.

THE ELECTRICAL TREATMENT OF SEWAGE.

Some interesting facts and figures as to the electrical treatment of sewage at the Crossness Pumping Station are brought to light in the report of Mr. Dibdin, chemist, and Mr. Shoolbred, electrician, made at the request of the London County Council. Mr. Dibdin sets forth the details of each experiment and the results of the analyses of the effluents, as well as a full description of the plant employed. The process of dealing with the sewage is known as Mr. William Webster's process of electrical treatment of sewage. Mr. Dibdin finds that the process is capable of removing practically the whole of the matters in suspension, and an average of 22 per cent. of the oxidizable organic matters in solution, at a cost of £1 15s. per million gallons of sewage, or £102,200 per annum for the whole of the daily flow of the 160 millions of gallons of London sewage, exclusive of labour, interest on capital, wear and tear, &c., and the cost of disposing of the sludge. The most important point to ascertain in this process, after the consumption of coal, seems to be the loss of iron in the plates, used as the electrodes, by the passage of the electric current through them, and the experiments so far made afford no reliable data. Over a million pounds were expended by the Metropolitan Board of Works on this treatment, and the council have expended £250,000, and all of which has been expended to no good purpose. Several members of the Council advocate the extension of the outfall works to the sea, but further investigations cannot be proceeded with at present. Other schemes meanwhile are being pushed forward, such as the purchasing of Canvey Island, in order to there deposit the sewage, but in the end it will probably be found that the extension of the outfall works right away to sea is the best solution of the problem.

The *County Council Times* learns that the Standing Committee of the London County Council has decided to recommend to the Council the appointment of Mr. A. R. Binnie, water engineer of Bradford, as chief engineer, in the place of Mr. Dunscombe, of Liverpool, who was appointed in December last upon the death of Mr. Gordon, but who has resigned on account of ill-health. The appointment carries with it a salary of £1,500 a year.

THE PUBLIC HEALTH

During January 1890.

The mean temperature during the month of January at the Royal Observatory, Greenwich, was 43°·4, and was as much as 7°·1 above the average January temperature in one hundred years. With the exception of the first month of 1884, when the mean temperature was as high as 43°·9, no higher temperature has been recorded for any corresponding period since 1846. An excess of temperature prevailed on twenty-six days during the month, while on only five days it was below the average. The coldest day of the month was the 1st, when the mean was 30°·4, and was 7°·7 below the average; the mildest day was the 6th, when the mean was as high as 52°·0, and showed an excess of 14°·2. Rain was measured on nineteen days during the month, to the aggregate amount of 2·1 inches, which exceeded by 0·2 of an inch the average amount in the corresponding periods of sixty-one years. The sun was above the horizon during 259·1 hours during the month under notice, and 44·0 hours of bright sunshine were recorded at Greenwich, which exceeded the amount registered in the corresponding month of any year on record. The wind was easterly during the first few days of January, after which south-westerly winds prevailed almost throughout the month.

In the twenty-eight large English towns dealt with by the Registrar-General in his weekly returns, which have an estimated population of nearly nine and three-quarter millions of persons, 30,465 births and 23,923 deaths were registered during the five weeks ending Saturday, February 1. The annual birth-rate, which had declined from 31·1 to 28·3 per 1,000 in the three preceding months rose again to 32·7 during the month under notice, but was below the average rate in the corresponding periods of the eight preceding years, 1882–89. In London the birth-rate last month was 32·3 per 1,000, while it averaged 33·0 in the twenty-seven provincial towns, among which it ranged from 23·6 in Huddersfield, 24·6 in Brighton, and 27·1 in Nottingham, to 39·1 in Manchester, 41·5 in Preston, 41·8 in Newcastle-upon-Tyne, and 42·6 in Cardiff.

The annual death-rate in the twenty-eight towns, which had increased in the four preceding months from 17·0 to 22·5 per 1,000, further rose to 25·7 during the month under notice, and considerably exceeded the rate recorded in the corresponding period of any of the eight preceding years. The lowest rate of mortality in these towns last month was 16·6 in Nottingham. The rates in the other towns, ranged in order from the lowest, were as follow:—Birkenhead, 17·6; Leicester, 18·6; Brighton, 19·3; Norwich, 19·5; Derby, 19·9; Huddersfield, 20·1; Salford, 20·7; Oldham, 20·8; Cardiff, 21·2; Halifax, 21·2; Bradford, 22·4; Sunderland, 23·1; Portsmouth, 23·4; Wolverhampton, 23·6; Sheffield, 24·3; Hull, 24·3; Bolton, 24·3; Liverpool, 24·6; Birmingham, 25·0; Plymouth, 25·4; Blackburn, 25·5; Newcastle-upon-Tyne, 25·7; Bristol, 25·9; Leeds, 26·8; Preston, 26·8; London, 28·1; and the highest rate during the month, 30·3 per 1,000 in Manchester. The mean death-rate in the twenty-seven provincial towns was 23·7 per 1,000, while in London, as before stated, it was as high as 28·1 per 1,000. The 23,923 deaths from all causes in the twenty-eight towns during the five weeks of January included 779 which were referred to whooping-cough, 278 to measles, 266 to scarlet fever, 230 to diphtheria, 173 to "fever" (principally enteric), 159 to diarrhœa, and not one to small-pox; in all, 1,885 deaths resulted from these principal zymotic diseases, equal to an annual rate of 2·0 per 1,000, which was below that in the corresponding period of any year on record. The death-rate in London last month from the principal zymotic diseases was equal to 2·1 per 1,000, while in the twenty-seven provincial towns it averaged 2·0, and ranged from 0·6 in Leicester, in Halifax, and in Cardiff, and 0·7 in Oldham, to 3·0 in Plymouth, 3·2 in Salford, 3·7 in Bolton, and 4·0 in Bristol.

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Whooping-cough was the most fatal zymotic disease in the twenty-eight towns during the month under notice. The rate of mortality from this disease, which had increased from 0·28 to 0·63 per 1,000 in the three preceding months, further rose to 0·84 during January, and slightly exceeded the average rate in the corresponding periods of the eight preceding years, 1882–89. In London the death-rate from whooping-cough was as high as 1·09 per 1,000, while in the twenty-seven provincial towns it averaged only 0·62, and was highest in Salford, Portsmouth, Hull, Bolton, and Bristol. The death-rate from measles, which had increased from 0·17 to 0·40 per 1,000 in the four preceding months, declined again to 0·30 during the month under notice, and was below the rate in the corresponding period of any year on record. In London the rate of mortality from measles was 0·27 per 1,000, while it averaged 0·32 in the twenty-seven provincial towns, among which this disease showed the highest proportional fatality in Norwich, Birmingham, and Liverpool. The death-rate from scarlet fever, which had declined from 0·41 to 0·36 per 1,000 in the three preceding months, further fell to 0·29 during January, and was considerably below the average rate in the corresponding periods of the eight preceding years. In London the scarlet fever death-rate was only 0·17 per 1,000, while it averaged 0·38 in the twenty-seven provincial towns, among which this disease was proportionately most prevalent in Blackburn, Sheffield, Manchester, and Plymouth. The rate of mortality from diphtheria, which had been 0·26 and 0·31 per 1,000 in the two preceding months, declined again to 0·25 during the month under notice, but considerably exceeded the average rate in the corresponding periods of the eight preceding years, 1882-89. In London the death-rate from diphtheria was as high as 0·30 per 1,000, while in the twenty-seven provincial towns it did not average more than 0·20, and was highest in Manchester and Salford. The death-rate from different forms of "fever" (including typhus, typhoid, and simple and ill-defined forms of fever), which had declined from 0·30 to 0·23 per 1,000 in the three preceding months, further fell to 0·19 during January, a rate, with one exception, below that in the corresponding month of any year on record. In London the rate of mortality from "fever" was only 0·14 per 1,000, while it averaged 0·22 in the twenty-seven provincial towns, among which this disease was proportionately most prevalent in Manchester and Huddersfield. The rate of mortality from diarrhœa was 0·17 per 1,000, and was slightly below the average rate in the corresponding periods of recent years. No death resulted from small-pox during the month under notice, either in London or in any of the twenty-seven provincial towns, and only 3 small-pox patients were under treatment in the Metropolitan Asylum Hospitals at the end of January. These hospitals contained, however, 1,290 scarlet fever patients on the same date, against 1,569 and 1,541 at the end of the two preceding months; the weekly admissions during January averaged 86, against 157, 123, and 122 in the three previous months.

The rate of infant mortality in the twenty-eight towns, measured by the proportion of deaths under one year of age to registered births, was equal to 144 per 1,000 last month, and differed but slightly from the average rate in the corresponding periods of the eight preceding years. In London the rate of infant mortality was 144 per 1,000, while it averaged 143 in the twenty-seven provincial towns, and ranged from 107 in Halifax, 112 in Nottingham, 113 in Cardiff, and 117 in Birkenhoad, to 165 in Plymouth, 166 in Bolton, 170 in Salford, and 174 in Huddersfield.

The death-rate from diseases of the respiratory organs, judged by the metropolitan returns, showed a very marked excess during January. The weekly number of deaths referred to these diseases in London, many of which were more or less directly caused by influenza, was 842, and the annual death-rate was equal to 9·9 per 1,000, exceeding the average by no less than 3·2 per 1,000, or nearly 50 per cent.

Statistics relative to the mortality from influenza in the large English towns, except London, are not yet available; the number of deaths directly referred to this disease in the metropolis during the five weeks of January were respectively 4, 67, 127, 107, and 75, or 380 in all.

The causes of 442 of the 23,923 deaths in the twenty-eight towns during the five weeks of January were not certified, either by registered medical practitioners or by coroners. These uncertified deaths were equal to 1·8 per cent. of the total deaths, a lower proportion than in any preceding month on record. In London the proportion of uncertified deaths was only 0·8 per cent., while it averaged 2·8 in the twenty-seven provincial towns. The causes of all the deaths in Norwich were duly certified, and only one was uncertified in Wolverhampton and in Derby; the highest proportions of uncertified deaths were recorded in Huddersfield, Liverpool, Halifax, and Sheffield.

Among the population living in the outer ring of suburban districts around London, estimated at upwards of one and a quarter millions of persons, the annual death-rate from all causes during January was 21·7 per 1,000, and exceeded that recorded in the corresponding period of any of the eight preceding years. During the five weeks ending February 1, 103 fatal cases of whooping-cough, 37 of measles, 34 of diphtheria, 17 of scarlet fever, 15 of diarrhœa, 12 of "fever" (principally enteric), and not one of small-pox, were registered in the outer ring; in all 218 deaths resulted from these principal zymotic diseases, equal to an annual rate of 1·7 per 1,000, which was below the average in the corresponding periods of recent years. Compared with the preceding month, the fatality of whooping-cough showed a marked increase, while that of each of the other zymotic diseases showed a decline. Of the 103 deaths from whooping-cough, 27 occurred in Croydon, 19 in West Ham, and 13 in Tottenham registration sub-districts. The 37 fatal cases of measles included 7 in West Ham and 6 in Croydon; of the 34 deaths from diphtheria, 5 occurred in West Ham, 3 in Chislehurst, 3 in Uxbridge, and 3 in Walthamstow; and 7 of the 17 fatal cases of scarlet fever were recorded in Croydon sub-district.

THE Worcestershire County Council have resolved on the appointment of a medical officer of health, at a salary of £800.

BATHS AND WASH-HOUSES IN ST. JAMES'S WESTMINSTER.—A report recently issued by the parish of St. James's, Westminster, sets forth some interesting facts as to the baths and wash-houses in that district. During the past year the debt on the baths and wash-houses has been extinguished, and the commissioners hope, with the approval of the vestry, to construct a first-class swimming bath. The Baths and Wash-houses Act was adopted by the vestry of St. James's in the year that it was passed (1846), but it was not until 1852 that the baths and wash-houses were thrown open to the public. The whole cost of erecting and equipping the establishment was defrayed from loan on security of the poor rate, the nett cost of the establishment to the ratepayers being £25,621 10s. 1d. in addition to the value of the freehold site. For this sum the ratepayers have obtained a freehold building with all the apparatus and appliances necessary for carrying on a large business. The value of such an establishment in the midst of a neighbourhood crowded with poor, cannot be reckoned merely on a pecuniary basis. Cleanliness is an important factor in maintaining health, and to the working-classes is in great measure equivalent to money. About 150,000 tickets are issued annually, of which about 100,000 relate to the baths, and the remainder to the wash-houses. Since the opening of the establishment to the end of last year, no fewer than 6,227,711 tickets have issued, and the total sum received from the bathers and wash-houses during this period has been £112,831 9s. 8d. These figures speak for themselves, and prove the value and popularity of such establishments.

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Table showing Sickness and Mortality in 76 Sanitary Districts of England and Scotland during the Month of January 1890.

Sanitary Districts.	Estimated Population middle of 1890.	Small-pox.		Scarlet Fever.		Diphtheria.		Typhus Fever.		Enteric Fever.		Cholera.		Relapsing Fever.		Puerperal Fever.		Totals of Preceding Columns.		Annual Rate per 1,000 Persons Living.		Deaths from other Zymotic Diseases.				Total Mortality from all Causes per 1,000 Persons Living.
		Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Ill-defined Fever.	Measles.	Whooping-cough.	Diarrhœa.	
Aberdeen	123,600	—	—	22	—	1	1	—	—	12	3	—	—	—	—	—	1	35	5	3·3	0·5	1	5	7	3	26·2
Accrington	40,000	—	—	2	2	2	1	—	—	3	—	—	—	—	—	—	—	7	3	2·1	0·9	—	—	1	—	16·2
Alverstoke	18,000	—	—	1	—	—	—	—	—	3	—	—	—	—	—	—	—	4	—	2·3	—	—	—	5	—	30·7
Ashton-under-Lyne	40,488	—	—	7	1	—	—	—	—	5	1	—	—	—	—	—	—	12	2	3·5	0·6	—	—	—	—	24·4
Barrow-in-Furness	50,000	—	—	22	—	9	—	—	1	8	—	—	—	—	—	—	—	39	1	9·2	0·2	—	—	23	1	28·7
Basford	51,000	—	—	15	1	3	—	—	—	4	1	—	—	—	—	—	—	22	2	5·1	0·5	—	1	1	—	15·7
Birkenhead	102,090	—	—	21	1	2	1	4	—	9	1	—	—	—	—	—	—	36	3	4·6	0·4	—	—	3	1	16·6
Blackburn	125,081	—	—	41	8	—	—	—	—	12	1	—	—	—	—	—	—	53	9	4·5	0·8	—	3	2	5	25·2
Bolton	115,846	—	—	120	8	6	2	1	—	4	2	—	—	—	—	—	—	131	12	11·8	1·1	—	1	20	1	24·9
Bournemouth	36,300	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	1	—	0·3	—	—	—	—	1	16·6
Bradford	240,515	—	—	37	3	1	1	—	—	19	3	—	—	—	—	—	—	57	7	2·5	0·3	—	9	1	3	22·4
Burnley	95,000	—	—	56	7	—	—	—	—	9	2	—	—	—	—	—	1	65	10	8·9	1·4	—	—	2	—	17·9
Burton-on-Trent	48,473	—	—	12	1	—	—	—	—	3	—	—	—	—	—	—	—	15	1	3·6	0·2	—	1	3	2	16·8
Bury	61,000	—	—	2	—	1	—	—	—	1	—	—	—	—	—	—	—	4	—	1·3	—	—	—	—	1	20·6
Cambridge	41,070	—	—	11	1	8	2	—	—	1	—	—	—	—	—	—	—	20	3	5·7	0·9	—	2	8	—	19·5
Cardiff	117,012	—	—	20	1	6	1	—	—	8	—	—	—	—	—	—	—	34	2	3·0	0·2	—	—	1	3	21·2
Chatham	30,000	—	—	23	—	3	—	—	—	—	—	—	—	—	—	—	—	26	—	10·2	—	—	—	6	—	27·5
Cheltenham	47,200	—	—	2	—	6	3	—	—	1	1	—	—	—	—	—	—	9	4	2·2	1·0	—	—	1	1	23·2
Coventry	52,000	—	—	6	—	—	1	—	—	4	1	—	—	—	—	1	1	11	3	2·5	0·7	—	—	—	1	15·9
Darlington	40,000	—	—	20	1	2	—	—	—	6	—	—	—	—	—	—	1	28	2	8·2	0·6	—	1	—	1	19·4
Darwen	36,500	—	—	13	2	—	—	—	—	4	1	—	—	—	—	—	—	17	3	5·5	1·0	—	—	1	1	14·8
Derby	100,871	—	—	31	—	4	2	—	—	3	2	—	—	—	—	—	—	38	4	4·9	0·5	—	1	4	1	20·6
Devonport	50,000	—	—	35	6	—	—	—	—	1	—	—	—	—	—	—	—	36	6	8·5	1·4	—	—	1	—	17·4
Dewsbury	33,000	—	—	5	1	—	—	—	—	—	—	—	—	—	—	—	—	5	1	1·8	0·4	—	3	—	1	19·3
Dover	31,483	—	—	7	—	—	—	—	—	—	—	—	—	—	—	—	—	7	—	2·6	—	—	—	—	1	22·1
Dundee	166,027	—	—	7	—	11	9	—	—	4	—	—	—	—	—	—	—	22	9	1·6	0·6	—	2	17	8	31·5
Edinburgh	271,135	—	—	141	3	40	17	5	—	17	4	—	—	—	—	—	—	203	24	8·8	1·0	—	72	26	2	27·4
Exeter	39,000	—	—	10	—	—	—	—	—	3	1	—	—	—	—	—	—	13	1	3·9	0·3	—	—	1	—	27·2
Gillingham	26,000	—	—	3	—	—	—	—	—	1	—	—	—	—	—	—	—	4	—	1·8	—	—	—	1	1	12·2
Gorton	41,000	—	—	19	1	3	—	—	—	7	3	—	—	—	—	—	—	29	4	7·4	1·0	—	1	1	1	26·0
Great Yarmouth	50,272	—	—	1	—	2	—	—	—	24	3	—	—	—	—	2	3	29	6	6·8	1·4	—	—	—	—	21·8
Greenock	79,312	—	—	36	2	5	3	1	1	5	—	—	—	—	—	—	—	47	6	7·7	1·0	—	—	—	1	16·8
Grimsby	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Guildford	13,428	—	—	6	—	—	—	—	—	2	—	—	—	—	—	—	—	8	—	7·0	—	—	—	—	—	18·4
Halifax	82,500	—	—	12	—	7	1	—	—	5	1	—	—	—	—	—	—	24	2	3·8	0·3	—	—	—	—	20·5
Heston & Isleworth	25,288	—	—	1	—	1	—	—	—	2	—	—	—	—	—	—	—	4	—	1·9	—	—	—	—	—	14·9
Heywood	25,000	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	2	—	0·9	—	—	—	—	—	18·4
Huddersfield	94,253	—	—	10	1	3	1	—	—	8	5	—	—	—	—	—	1	21	8	2·3	0·9	—	—	1	—	20·2

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Sanitary Districts.	Estimated Population middle of 1890.	Small-pox.		Scarlet Fever.		Diphtheria.		Typhus Fever.		Enteric Fever.		Cholera.		Relapsing Fever.		Puerperal Fever.		Totals of Preceding Columns.		Annual Rate per 1,000 Persons Living.		Deaths from other Zymotic Diseases.				Total Mortality from all Causes per 1,000 Persons Living.
		Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Ill-defined Fever.	Measles.	Whooping-cough.	Diarrhœa.	
Jarrow	32,000	—	—	1	—	—	—	—	—	—	1	—	—	—	—	—	—	1	1	0·3	0·3	—	—	4	—	21·5
Keighley	29,660	—	—	52	7	4	1	—	—	3	1	—	—	—	—	1	—	60	9	23·8	3·6	—	—	—	—	24·2
Kidderminster	26,500	—	—	20	1	2	1	—	—	—	—	—	—	—	—	—	—	22	2	10·8	1·0	—	3	—	1	20·7
Lancaster	28,301	—	—	7	1	—	—	—	—	2	—	—	—	—	—	—	—	9	1	3·7	0·4	—	—	1	—	23·7
Leamington	24,871	—	—	3	—	—	—	—	—	3	—	—	—	—	—	—	—	6	—	2·8	—	—	—	—	1	21·8
Leek	13,778	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	17·5
Leicester	154,344	—	—	52	3	7	1	—	—	20	3	—	—	—	—	—	—	79	7	5·3	0·5	—	—	—	2	18·2
Llanelly	23,555	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	1	—	0·5	—	—	—	5	1	19·0
Macclesfield	37,514	—	—	2	—	—	—	—	—	1	—	—	—	—	—	—	—	3	—	0·8	—	—	—	1	—	27·5
Manchester	379,437	—	—	137	24	36	10	1	1	39	8	—	—	—	—	3	2	216	45	7·4	1·5	3	3	14	16	29·9
Norwich	95,352	—	—	10	1	12	5	—	—	7	2	—	—	—	—	—	—	29	8	3·2	0·9	—	7	1	2	19·5
Nottingham	244,909	—	—	106	2	9	2	—	—	35	4	—	—	—	—	—	—	150	8	8·0	0·4	—	6	1	5	17·2
Oldham	146,716	—	—	43	2	1	—	—	—	1	1	—	—	—	—	3	3	48	6	4·3	0·5	—	—	7	—	26·0
Portsmouth	142,952	—	—	53	2	10	4	—	—	27	2	—	—	—	—	—	—	90	8	6·6	0·6	—	—	15	—	23·4
Preston	105,163	—	—	18	—	6	2	—	—	7	2	—	—	—	—	1	—	32	4	4·0	0·5	—	—	1	—	26·2
Reading	62,271	—	—	2	—	3	1	—	—	3	2	—	—	—	—	1	—	9	3	1·7	0·6	—	—	—	4	19·5
Ripon	7,670	—	—	1	—	—	—	—	—	1	1	—	—	—	—	—	—	1	1	0·2	0·2	—	—	—	3	21·5
Rochdale	73,772	—	—	4	—	4	1	—	—	—	—	—	—	—	—	—	—	8	1	1·3	0·2	—	—	—	—	24·4
Rochester	25,000	—	—	27	—	4	3	—	—	—	—	—	—	—	—	1	—	32	3	15·1	1·4	—	—	—	—	26·4
Rotherham	36,482	—	—	10	1	1	—	—	—	—	—	—	—	—	—	—	—	11	1	3·1	0·3	—	4	—	—	28·0
Salford	242,509	—	—	109	10	57	17	3	2	28	5	—	—	—	—	—	—	197	34	8·5	1·5	—	4	24	13	20·7
Scarborough	36,200	—	—	3	—	5	3	—	—	2	—	—	—	—	—	—	—	10	3	2·9	0·9	—	—	1	—	15·0
Sheffield	332,837	—	—	211	18	27	5	9	3	21	4	—	—	—	—	2	1	270	31	9·6	1·1	—	5	2	2	24·1
Southport	(?)	—	—	7	1	15	4	—	—	1	—	—	—	—	—	—	—	23	5	?	?	—	—	1	—	?
Stafford	21,660	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	14·1
Stalybridge	28,184	—	—	14	2	1	1	—	—	—	—	—	—	—	—	—	—	15	3	6·9	1·4	—	—	2	1	19·0
Stockton-on-Tees	50,000	—	—	15	—	—	—	—	—	5	1	—	—	—	—	—	—	20	1	4·7	0·2	—	—	2	—	18·6
Sunderland	136,506	—	—	39	4	7	1	1	1	17	2	—	—	—	—	—	—	64	7	4·9	0·5	—	3	3	2	23·1
Todmorden	25,750	—	—	2	1	4	4	—	—	2	1	—	—	—	—	—	—	8	6	3·7	2·7	—	1	1	1	25·6
Tynemouth	49,538	1	—	15	—	1	—	—	—	1	—	—	—	—	—	—	—	18	—	4·3	—	—	2	3	—	24·3
Wakefield	33,676	—	—	3	—	6	—	—	—	2	—	—	—	—	—	—	—	11	—	3·8	—	—	—	1	1	18·9
Wallasey	33,500	—	—	13	1	—	—	—	—	1	—	—	—	—	—	—	—	14	1	4·9	0·4	—	—	—	—	14·8
Warrington	50,000	—	—	19	4	1	1	—	—	7	2	—	—	—	—	2	2	29	9	6·1	1·9	—	18	13	—	32·4
West Ham	180,000	—	—	33	3	19	7	—	—	3	—	—	—	—	—	—	—	55	10	3·6	0·7	—	6	19	1	23·3
Weymouth	14,134	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	22·5
Widnes	30,000	—	—	20	—	—	—	—	—	10	1	—	—	—	—	—	—	30	1	11·8	0·4	—	—	—	—	24·7
Wigan	54,509	—	—	10	1	1	—	—	—	6	2	—	—	—	—	—	—	17	3	3·7	0·7	—	3	—	2	27·2
Willesden	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Wolverhampton	83,407	—	—	26	2	2	2	—	—	2	1	—	—	—	—	—	—	30	5	3·8	0·6	—	3	7	1	22·8
York	75,327	—	—	11	1	3	1	—	—	2	1	—	—	—	—	—	—	16	3	2·2	0·4	—	—	1	—	18·0

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NOTIFICATION OF INFECTIOUS DISEASES

IN 76 URBAN SANITARY DISTRICTS.

THE invitation addressed to the medical officers of health of most of the principal urban sanitary districts that have recently adopted the Infectious Disease (Notification) Act, 1889, asking their co-operation in the endeavour to collect and publish uniform and reliable statistics relating to sickness and mortality, has received a most gratifying response, nearly all the medical officers of health whose assistance was solicited having promised to furnish the desired information. We are thus enabled to publish in our present issue statistics of sickness and mortality relating to no fewer than 76 urban sanitary districts, including about twenty of the largest English towns; and we hope to be able to add to our list from time to time all large urban sanitary districts in which the Act may come into force. The statistics in the accompanying table relate to a population of upwards of five and a half millions of persons. The annual rate of mortality from all causes during January in the 76 sanitary districts was equal to 22·8 per 1,000 of their aggregate population. The rates during the month under notice were considerably below the average in Basford, Coventry, Darwen, Gillingham, Heston and Isleworth, Scarborough, Stafford, and Wallasey; while they showed an excess in Alverstoke, Barrow-in-Furness, Chatham, Edinburgh, Exeter, Macclesfield, Manchester, Rotherham, Warrington, and Wigan. The death-rate from the eight infectious diseases dealt with in the table averaged 0·75 per 1,000. No deaths from any of these infectious diseases were registered during last month at Alverstoke, Bournemouth, Bury, Chatham, Dover, Gillingham, Guildford, Heston and Isleworth, Heywood, Leamington, Leek, Llanelly, Macclesfied, Stafford, Tynemouth, Wakefield, or Weymouth; whereas they caused the highest rates in Burnley, Great Yarmouth, Keighley, Manchester, Rochester, Salford, Stalybridge, Todmorden, and Warrington. Scarlet fever showed the highest proportional fatality in Burnley, Keighley, Manchester, and Warrington; diphtheria in Cheltenham, Edinburgh, Rochester, Salford, Scarborough, and Todmorden; enteric fever in Gorton and Great Yarmouth; measles in Edinburgh, Norwich, Rotherham, and Warrington; and whooping-cough in Alverstoke, Barrow-in-Furness, Cambridge, Chatham, Llanelly, and Warrington. Three deaths from puerperal fever were recorded in Great Yarmouth, 3 in Oldham, 2 in Manchester, and 2 in Warrington. With reference to the notified cases of infectious disease in these districts during January, it appears that the proportion of the population reported to be suffering from one or other of the eight diseases specified in the accompanying table was equal to 5·5 per 1,000. No case of any of these diseases was reported during the month under notice in Leek or Stafford, and only one in Bournemouth, Jarrow, Llanelly, and Ripon; and while the proportion did not exceed 2·0 per 1,000 in Bury, Dewsbury, Dundee, Gillingham, Heston and Isleworth, Heywood, Macclesfield, Reading, and Rochdale, it ranged upwards in the other districts to 10·2 in Chatham, 10·8 in Kidderminster, 11·8 in Bolton and in Widnes, 15·1 in Rochester, and 23·8 in Keighley. Scarlet fever was proportionally most prevalent in Bolton, Burnley, Chatham, Keighley, Kidderminster, Rochester, Sheffield, Stalybridge, and Widnes; diphtheria in Barrow-in-Furness, Cambridge, Edinburgh, Keighley, Rochester, Salford, Todmorden, and Wakefield; and enteric fever in Barrow-in Furness, Darlington, Gorton, Great Yarmouth, Nottingham, Portsmouth, and Widnes. Three cases of puerperal fever were notified during the month in Manchester, and 3 in Oldham. One case of small-pox was notified in Tynemouth, but not one in any other of the sanitary districts.

SPECIAL REPORTS, ABSTRACTS, &c.

MEETING OF THE YORKSHIRE BRANCH OF MEDICAL OFFICERS OF HEALTH.

LEAD POISONING AND THE WATER SUPPLY OF TOWNS.

THE annual meeting of the Yorkshire Branch of the Society of Medical Officers of Health was held at the Municipal Buildings, Leeds, on Jan. 15.

Dr. J MITCHELL WILSON (Doncaster) presided, and there were also present Dr. Spottiswoode Cameron (Leeds), Dr. Arthur Roberts (Keighley), Dr. Buncle (Pontefract), Dr. Wade (Wakefield), Dr. Herbert (Whitby), Dr. Ramsden (Saddleworth), Dr. Atkinson (Settle), Dr. Theodore Thomson (Sheffield), Dr. J. Wright Mason (Hull), and Alderman Ward (Leeds).

Owing to the absence of the secretary (Dr. McLintock, Bradford), who was in Paris in charge of hydrophobia patients, the annual report was not read: the CHAIRMAN, however, remarked that the relations of the branch with the London Society were even closer and more important than before.

On the motion of Dr. WADE, seconded by Dr. BUNCLE, Dr. CAMERON was elected president for the ensuing year.

The following were elected vice-presidents: Drs. Mitchell Wilson, Roberts, Wade, North (York), and Britton (Harrogate). Dr. McLintock was re-elected hon. sec. and treasurer.

Dr. HERBERT (Whitby) read a paper on

"LEAD POISONING."

The considerations Dr. Herbert put forward were suggested to him by a fatal case of chance lead poisoning, the victim being a farmer's widow, about 60 years of age, a few miles from Whitby. Thinking, when he was called in, that it was a clear case of lead poisoning, caused by potable water probably, and knowing the great danger which attached to some of the moorland water supplies, caused by their action on lead during the passage of the water through lead service or delivery pipes, which water was especially impregnated with lead if allowed to stand in the service pipe all night, he directed his steps to the servants' kitchen, where he found the usual filthy brass tap, coated with verdigris, fixed over the sink stone. He had a sample of this water taken, in which he found traces of lead, together with a slight but appreciable amount of organic matter: but in a second sample, taken a day or two later, no appreciable trace of lead was found. He also found in the dairy two large leaden bowls, in which milk was stored, and a third leaden bowl in which part of a porking pig was lying in pickle. On since making inquiries, he found that the use of these lead bowls for storing milk and pickling animal food was still a very common practice, and one that had been generally in vogue among the farmers and others from time immemorial, although it was one of the most dangerous practices it was possible to conceive. Pointing to some of the lessons which this case had impressed upon his mind, he said that probably many persons died every day in the year from toxæmia, or true blood poisoning, induced by plumbism, when the deaths were erroneously described to the symptoms only. This would not be if there were more post-mortem examinations allowed and fewer coroner's inquests, at which the juries solemnly agreed to the stereotyped and time-honoured verdicts, which covered such a multitude of sins, "Died from natural causes," or "Died by the visitation of God." In his opinion coroners should be independent men, having a special medico-legal training for the work, not men who were in actual practice in either the medical or legal professions. It was only in recent years that the world had fully begun to realise the fact that lead was one of the most subtle and dangerous poisons. This would account in some measure for the numerous uses, domestic and otherwise, that people in their ignorance had hitherto applied it to. Some cheap teas were adulterated with lead, as were also rum, wine, cider, and beer. So was snuff, in which red lead was used to improve its colour,

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and cases of actual lead poisoning had frequently been known to occur from the use of such stuff. Lead colours, chromates, and other materials used to colour confectionery were all liable to cause lead poisoning. It was a fact that lead poisoning was more prevalent in towns which derived their waters from the moors. For some years he had been seriously thinking of the danger caused by thousands of so-called sportsmen, who were every year shooting tons upon tons of lead all over the land. A common bullet was generally formed entirely of lead, while in small shot, which was used for killing game, each pellet was composed of lead, with a minute fractional portion of arsenic, as well as a little antimony. In some places on the moors the ground was literally paved with lead. The effects were terrible to contemplate when they considered that some of the water on the moors which became impregnated found its way into the supply to the towns.

The CHAIRMAN remarked that this subject was exciting a good deal of interest in the West Riding, and deservedly so. Probably, however, they might not all take the pessimist view with regard to the supposed danger arising from the uses of lead that was taken by Dr. Herbert. He suggested that in the discussion they should confine their observations to the effect of lead poisoning on water supply.

Dr. THOMSON reminded the members of the importance which the subject had assumed in Sheffield, observing that the problem was one which was exceedingly difficult of solution. As regarded the question as to whether water contaminated by lead was injurious to health, he did not think there were two opinions on the point when the contamination reached a certain standard. The Sheffield water from the high level was capable of taking up lead to such an extent as to be extremely deleterious to health. During the past year six deaths had been certified in Sheffield as having resulted from lead poisoning, and five of these were undoubtedly caused in connection with trades. There was no lead whatever in the Sheffield water when it left the reservoir; it was only when it got into the service pipes that it became contaminated. As to the case of water acting on lead Dr. Sinclair White, his predecessor as medical officer of Sheffield, while not absolutely committing himself, was of opinion that it was due to the presence of a certain amount of free acid in the water supply from the high level. It had also been suggested that it was due to the absence of silica. He was hardly inclined to agree with Dr. Herbert as to the moorland water supplies giving rise to lead poisoning. In view of the uncertainty as to the final cause he suggested that the Local Government Board should cause an inquiry to be made into the subject.

Alderman WARD, referring to Dr. Herbert's remarks as to the contamination of moorland water, said that though Leeds drew all its supply from the moors he did not think there had been reported a single case of lead poisoning arising from the water supply. There had been cases of lead poisoning, but they had generally arisen in connection with some particular trade. He explained in the case of the Leeds supply that the water was in the first place passed through a large reservoir, after which it was sent through iron pipes to the Weetwood filter beds where it underwent a process of filtration, by which means, it was contended, its susceptibility to absorb lead was removed or reduced. It had been suggested that all lead pipes through which water passed should be lined with some material which would prevent contamination. That would to some extent raise the question of expense. The whole question certainly seemed a sufficiently important one to call for the attention of the Local Government Board.

Dr. CAMERON went into the question at some length, as it more particularly affected Huddersfield, which he believed was the first town known to suffer from lead poisoning in regard to its water supply. The theory of the Borough Analyst (Mr. Jarmain) was that sulphuric acid in the water caused it to act upon the lead pipes. It seemed to him (Dr. Cameron) that there was a time of the year when lead seemed to be most affected, and a time when it was least affected. He thought they would find that in the summer and the autumn, and late autumn, there were the greatest number of cases of lead poisoning, It might be said that people drank more water at those seasons. He was inclined to think that the organic processes taking place on the moors had a good deal to do with the production of the acid, and he believed it was the acid which produced special action upon lead. He suggested that both processes alluded to might be going on. In the autumn the organic acids, which would have been produced to a large extent during the preceding summer, would become mixed with a small amount of sulphuric acid, a compound being thus created which would act upon lead. It was not necessary, said Dr. Cameron, for any man, woman, or child to suffer from lead poisoning. There were objections to iron pipes, but if they were introduced universally, lead poisoning would not follow. But even if the lead pipes were confined to the mains and those pipes which passed from the mains to the house, and if service pipes were of lead and people would take the trouble to let the water standing in the service pipes pass away, he believed no lead poisoning would occur. If they would use a common charcoal filter they would find that it would allow no lead to pass so long as the water was fresh.

Dr. ROBERTS was convinced that it was the acid in the water that caused it to dissolve lead. He reminded the meeting that the West Riding County Council had asked the Local Government Board to cause an inquiry into the subject.

Dr. BUNCLE saw no reason why the County Council should not have power to instruct its medical officer to make an inquiry.

Ultimately, on the motion of the CHAIRMAN, seconded by Dr. CAMERON, the following resolution was passed:—

That the Yorkshire Branch of the Society of Medical Officers of Health submit to the Local Government Board that at the present time the question of the presence of lead in the water supplies of several towns in the West Riding is exciting considerable anxiety; this Society considers the question of vital importance to the large populations of this district, yet one which cannot have that exhaustive inquiry which it deserves from local authorities alone. The Society would urge that this question is therefore essentially one deserving the investigation of the Department, and that they may be pleased to order an inquiry into the whole subject.

THE ASSOCIATION OF PUBLIC SANITARY INSPECTORS OF GREAT BRITAIN.

ON Saturday, February 1, the seventh annual banquet of this Association was held at the First Avenue Hotel, Holborn, when a large number of the members of the Association, visitors, and press representatives, were present; the chair at the principal table being occupied by Dr. B. W. RICHARDSON, LL.D., &c., in place of the president of the Association, Sir Edwin Chadwick, K.C.B., who was prevented from presiding by a serious attack of bronchitis. Mr. H. Alexander (chairman of the council), Mr. S. C. Legg (hon. sec.), Mr. C. W. Raymond (hon. treasurer), Mr. D. Richards, and Mr. E. Tidman, C.E., presided at the other tables respectively. Among the principal visitors were Dr. R. Farquharson, M.P., Surgeon-General C. A. Gordon, C.B., M.D., the Mayor of Leamington, Mr. Banister Fletcher (Master of the Carpenters' Company), Mr. Danford Thomas, Dr. Dudfield, Dr. Newsholme, Mr. Shirley F. Murphy, Dr. Gordon Hardie, Mr. E. C. Robins, F.R.I.B.A., &c., Mr. James Duncan (Home Office), Mr. Aubrey Richardson, &c.

In opening the proceedings, Dr. RICHARDSON explained the reason of his being called upon to preside instead of their venerable president. Sir Edwin Chadwick was suffering from a serious attack of bronchitis, of the consequences of which they had been much afraid, but he was glad to say that he had now rallied. Later in the evening, a telegram received from Lady Chadwick was read by the chairman, announcing that Sir Edwin Chadwick was progressing favourably, and wishing success to

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the Institution, a wish in which her husband heartily joined.

After grace, Dr. RICHARDSON proposed "The Queen and Royal Family," introducing the toast by a picturesque speech, in which he pointed out that it was during the reigns of the Queens of England that the most remarkable progress had been made. "The Kings of England," he said, "have made the reigns, the Queens of England the eras of our history." The reign of Mary was marked by great geographical discoveries, that of Elizabeth by astonishing progress in art, that of Anne by the development of English political institutions, and that of Victoria by a progress such as the world never before saw. It was a reign of health, reflected not only throughout our own islands, but throughout all the world.

The Master of the Carpenters' Company (Mr. BANISTER FLETCHER) then proposed "The Houses of Parliament," coupling with the toast the name of Dr. Farquharson, M.P., who responded.

Dr. FARQUHARSON expressed his sense of the great importance of sanitary science, and the services rendered to it by that Institution. The House of Commons had its "Grand Old Man" of 80 years, but they had in their president a grander old man of 90 years, who still kept up his interest in public affairs, and enabled them all to draw upon his vast knowledge of sanitary science and the principles of hygiene. Far too little attention had been given by Parliament to sanitary matters, and it was time for a little more attention to be devoted to home legislation. Local questions, and particularly sanitary questions, would have to receive more of the consideration of the House, and whatever party might be in power the legislature would look to that Institution, and to its venerable president, to help it to work out the problems of sanitary science.

Dr. DANFORD THOMAS next proposed "The Army, Navy, and Volunteers," coupling the name of SURGEON-GENERAL GORDON with the toast. who, in responding, pointed out that the hygiene of armies had step by step improved up to the present time, when army statistics compared most favourably even with those of civil life.

Dr. RICHARDSON then gave the toast of the evening, "The Association and its President." In proposing the toast, the Chairman referred to the anxiety with which many years ago he asked certain questions as to the means of working the sanitary Acts. Time and the founding of that Association had made a wonderful change. At one time, as editor of a journal, he had anxiously asked, "How is the working part of the Act (1855) to be carried out. The medical officer of health might justify all hopes, but where would he be able to get the men from that he must have in order to carry out the work in detail. The wonder was to know what part of the community could supply those men. At first the great difficulty was to get the men at all, and when got, what was to be their name. The name of sanitary inspectors was no doubt appropriate, but would the public tolerate inspectors unless they were of good manners and not obtrusive. They must be not only men of tact, but must be able to make a good report. All those doubts and questions had been resolved as time went on, and men of the right sort were found to come forward. But there was one cause to which far more than to any other must be attributed the solution of all their doubts, the existence of that Association. A more remarkable example of good work honestly done he had never seen. No better example could, he believed, be anywhere found. It was sometimes asked what were the objects of the Association. His answer was that the members of that Association were striving to learn everything they could in the shortest possible time, and in the best possible manner. Gentlemen not connected with the Association had a great deal to do in the matter. They could help them in protecting their lives, and in securing a proper provision for them, which had not as yet been made for them. The sanitary inspectors were exposed to dangerous diseases. Their position must be rendered more secure and permanent, and in order that this might be obtained they must stand shoulder to shoulder. He thought it was a great pity that every inspector in the United Kingdom did not belong to that Association. It was not, probably, from want of knowledge of its advantages, but from a kind of apathy which was wonderful. Provision ought to be made for their future but he did not suggest that it would ever be granted by the country. They must make provision for themselves, for the system of pensions from the public purse seemed to be passing away. There was a great work before them in endeavouring to found a great provident association. All would then surely join for that purpose if for no other. He was glad to find they were doing their work so well with the medical officers, and he congratulated them on the character of the meetings they had held at Westminster and elsewhere, and on their earnest and practical discussions in their congresses. All would wish long life and prosperity to that Association.

Turning to the other part of his toast, he gave them with peculiar pleasure "Health to the distinguished man who has presided over this Association from the first." Sir Edwin Chadwick when first asked by the Association to become its president had come to him (Dr. Richardson) to ask his advice upon the matter. He told their president that in his opinion it would be a fitting crown to the work of his life. He accepted that advice and became their president, and he was sure they were all proud of him. Sir Edwin felt strongly on the subject of his infirmity in the decline of life, for he took the warmest interest in the society, and wished to see its prosperity assured. "He declared that he would like to have another four years that he might make certain whether you would succeed or not, and to know that you would become a great and useful body."

Dr. RICHARDSON then called Mr. S. C. Legg, the honorary secretary, to the chair, that he might receive an illuminated address and a purse of gold. The Chairman said, you all know what Mr. Legg has done for this Association, which could not have had a more competent, willing, or well-tried officer. The Association wishes to present him with this testimonial, which reads as follows:—

To MR. SAMUEL C. LEGG, Hon. Sec.

DEAR SIR,—At the Annual General Meeting held at Westminster Town Hall on October 5, 1889, it was unanimously resolved, on the recommendation of the Council, to present you with this testimonial on the occasion of this Annual Dinner, expressing the Association's sense of its indebtedness to you for the great zeal and ability with which you have filled the position of Secretary up to the present time, and in recognition of the fact that to you the Association is principally indebted for its successful establishment seven years ago.

The Association also request your acceptance, in recognition of long and gratuitous labours done on its behalf, of the accompanying purse of gold, subscribed by the members and friends, and wish you many long years of happiness and prosperity.

EDWIN CHADWICK, President.
HUGH ALEXANDER, Chairman.

Dr. Richardson then added, I have also to present you with this purse of gold. It feels uncommonly heavy, but I am sure it is not more weighty than your merits. I wish you long life and happiness to enjoy it.

Mr. LEGG, whose emotion was very evident, could only murmur "I cannot reply, I can only thank you. I cannot say more than that."

Mr. SHIRLEY F. MURPHY (Medical Officer of London County Council) next proposed "The Executive," coupling the toast with the names of Mr. Hugh Alexander (chairman of council), and Mr. D. Richards (vice-chairman).

Mr. ALEXANDER, in reply, thanked the company, and particularly Mr. Murphy, on behalf of the Executive, for the proposal and reception of the toast. He also thanked Dr. Richardson for his presence as chairman, than whom no one could have more fully consoled them for the loss of the presence of their venerable president. If time had allowed he would have liked to show some of the difficulties under which the duties of a sanitary inspector were performed under the Nuisances Removal Act of 1855, and the other Acts affecting public health which had been since passed.

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The difficulties created or allowed by the earlier Acts had been repeated in the more recent ones. Chief among these difficulties was the absence of power to initiate legal proceedings. In the whole staff of sanitary inspectors charged with the care of the public health, not a man had any power to serve a notice, however urgent might be the need. Another difficulty which most inspectors in urban and rural districts laboured under was the system of appointment for two or three years only. He must be a very harmless kind of man who would get elected a second time, for if he dared to cross any of those upon whom his appointment depended he would not be elected again. Any local authority could defy the Acts by merely paying retaining fees of from £10 to £100 a year. It was a matter of course that those who accepted office on such terms would not be expected to do much for the money.

Mr. RICHARDS, who also responded to the toast, said they were endeavouring to carry on the good work initiated by the president, and under his guidance would do it to the best of their ability. A principal object of their efforts was to do everything they could to raise the status of inspectors, and they were further endeavouring with all the energy they could command to make themselves capable of doing those duties which in a short time would be thrown upon them.

Mr. TIDMAN, C.E., in proposing the toast "Local Government," said Mr. Ritchie had done some very good things during the eight years of his rule at the Local Government Board. There still remained much to do, particularly in more clearly defining the respective duties of surveyors and sanitary inspectors, and in devising measures for more effectually dealing with diphtheria and other infectious diseases.

The MAYOR of LEAMINGTON responded to the toast. He could only suppose that he had been selected for that honour because he represented a town which had been foremost in finding a practical solution of certain sanitary questions. Leamington had taken up the A.B.C. sewage system, and it was the only town which had been successful in carrying out the system without cost to the ratepayers, and while realising the ideal plan of returning sewage to the land had been able to do so at a profit. In the course of his address the Mayor suggested an extension of local government by the establishment of district councils and parish councils working in co-operation with and subordination to the county councils. Such a scheme properly organized would tend to cure many of the evils deplored by sanitary inspectors. Sanitary inspection would then be thorough and complete, the inspectors would be well up to their work, and no more would be heard of sanitary inspectors with £10 a year salaries. To complete the scheme they might eventually get a domestic parliament, which would relieve the House of Commons of the consideration of many of those questions with which it had so often proved itself incompetent to properly deal.

Dr. DUDFIELD was called upon to propose the toast of "The Chairman" in place of Professor Hughes, who had been compelled to leave by indisposition. Gratitude, it had been said, was a sense of favours to come. Their chairman had often already shown with what power he could state their case, and he invited the Association to display its gratitude by asking him to do it one more favour. Let them ask him to put their case once more forcibly before the public, and perhaps no man in England could do it with greater efficacy, for the public did not know the value of the work done by the sanitary inspectors, and therefore were unable to properly appreciate them and were not moved to give them support. On their behalf he would appeal also to Dr. Farquharson that night, to move on the first day of the new session of Parliament for a return of the work done by public sanitary inspectors for one year—say that ending October 1889. If such a return were produced and illustrated by Dr. Richardson the effect would be astounding.

Dr. RICHARDSON, in the course of a brief acknowledgment of the toast, replied to the appeal of Dr. Dudfield by an acceptance of his prosposal. "If Dr. Farquharson," he said, "will get together the materials asked for I will write a new Hygeia, in which this Institution shall have the principal place, and in which Mr. Alexander shall be the Mayor and Mr. Legg the Town Clerk."

The last toast, that of "The Visitors," was proposed by Mr. E. C. ROBINS, and responded to respectively by Dr. GORDON HARDIE, Dr. NEWSHOLME, and Mr. JAMES DUNCAN.

NATIONAL ASSOCIATION OF SANITARY INSPECTORS.

THE second annual meeting of the Yorkshire Centre of the National Association of Sanitary Inspectors was held in Leeds on Saturday, January 18, and was attended by a large number of members from various parts of the county.

The morning was taken up by visits to the Leeds Fire Clay Company's Pottery Works at Burmantofts, the Burmantofts Destructor of the Leeds Corporation, and Messrs. Slater's Sanitary Engineering Works in Bond Street. At the potteries the Association was received by representatives of the company, and conducted over their very extensive works, after viewing their specialities were kindly entertained at lunch in the showroom.

At the destructor, Mr. HORSFALL the representative for the owners of a patent for increasing incineration and economising fuel, attended and explained the process, the main feature being the introduction of steam jets. The large selection of modern sanitary appliances at the Leeds Engineering Works were inspected.

In the afternoon the members met, by permission of the Leeds Corporation, in the Council Chamber of the Leeds Town Hall, under the presidency of Mr. T. PRIDGIN TEALE, F.R.S., the president. Among those present were Dr. J. S. Cameron, Medical Officer of Health for Leeds; Dr. Wade, the Medical Officer of Health for Wakefield; Councillor Slater, Leeds; Mr. Newhouse, Leeds; Mr. D. Travis, Halifax; and representatives from the following urban and rural sanitary authorities:—Leeds, Bradford, York, Halifax, Wakefield, Sowerby Bridge, Tadcaster, Drighlington, Thornton, Elland, Huddersfield, Kirkheaton, South Crosland, Wombwell, Rothwell, Ovenden, Morley, Soothill Upper, Keighley, Holmfirth, Barnsley, Altofts, Knaresborough, Rawmarsh, Heckmondwike, Bingley, Churwell, Batley, Earlsheaton, and Wetherby.

The SECRETARY (Mr. Joseph Lindley) submitted the annual report, which recorded that the work of the Association was highly appreciated, and that the interest in the quarterly and other meetings continued unabated. The bill of Mr. E. S. Morris, M.P., for enabling county councils to grant superannuation to their officers had been carefully watched and commented upon. A committee termed a Superannuation Committee had drawn up a report on this important question, which was to be fully considered by the Central Council at their annual meeting. Correspondence had been commenced with the council of the Sanitary Institute, London, with reference to examinations in the North of England for sanitary inspectors in conjunction with the National Association of Sanitary Inspectors. The Association, which commenced with 66 members, now consisted of 138 members, 12 associates, and 38 hon. members, including 18 members of Parliament. The council concluded their report by congratulating the Association on having Mr. Pridgin Teale, F.R.S., as president. His eminent position and practice had considerably enhanced their success, and they tendered him their grateful thanks for his untiring efforts and interest, and sincerely hoped that he might long continue their esteemed president. The council also tendered their thanks to Mr. John Newhouse, of Leeds, for his zealous attention during the past year to the interests of the Association, and expressed regret at his resignation of the office of chairman of the council.

The report having been adopted, the PRESIDENT addressed the meeting. He thought the members of the Association had reason to congratulate themselves on

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the favourable way in which it was going on, and they must entertain a conviction that it was doing a considerable amount of good. During the year the Yorkshire Association had enlarged its borders by amalgamating with the Manchester Association by a wise method in which each Association maintained its individuality, had its own meetings and its own council, but at the same time each was represented upon a central council, this enabling the one centre to act on the experience of the other, and by uniting their forces to acquire greater power in urging forward points which required public consideration. There was also a feeling in favour of some such process taking place with regard to other centres, so that by degrees the Association might spread throughout the United Kingdom. A good many inspectors had to do their duty under considerable difficulty, owing to the insecurity of their appointments. In many cases the appointment was an annual one. At Leeds and some of the large towns it was continuous, so long as the officer did his duty and retained the confidence of his employers. This was the least position a sanitary inspector ought to have. It was very unfortunate that a man who had such difficult duties to perform, requiring such an amount of moral courage, should have to do it in the face of persons who at the next annual appointment might go against him. As public opinion ripened he was in hopes that such a defect in sanitary organization, which was injurious not merely to the sanitary officers but to the public, would be put right. The discussions at the meetings of the Association would have a tendency to arouse public opinion to this and other subjects, and do something to rectify what was wrong, and to bring about a better state of affairs.

Dr. J. S. CAMERON, Medical Officer of Health for Leeds, read a paper on "THE USE AND ABUSE OF DISINFECTANTS," published on page 363.

At the conclusion of the paper the thanks of the Association were, on the motion of Mr. NEWHOUSE, seconded by Dr. WADE, accorded to Dr. Cameron, and he was requested to allow it to be printed for the information and guidance of the members.

The officers for the ensuing year having been appointed, the proceedings terminated. The next general meeting will be held in March next at Sowerby Bridge.

Votes of thanks were unanimously accorded to the Leeds Fire Clay Company, and Mr. Councillor Slater.

NOTES FROM THE NORTH.

(From our own Correspondent.)

AT the last meeting of the Newcastle City Council it was announced that the rateable value of the city had increased during the past year no less than £7 19s. 6d. As a further instance of the commercial prosperity of the district, it was announced at a recent meeting of the River Tyne Commissioners, that at the end of the year they had in hand the enormous surplus of £49,600.

Mr. W. T. Clarke, chief inspector of nuisances at Newcastle, tendered his resignation at the last meeting of the council, which was accepted, and three months salary given him in lieu of notice.

The ordinary meeting of the River Tyne Port Sanitary Authority was held at the Town Hall, Newcastle, on February 3, when it was reported that the number of vessels inspected during the past month was 875, of which 470 were British steamers, 65 British sailing vessels, 120 foreign steamers, and 20 sailing vessels; the number of extra visits paid during the month was 186; the remainder of the business does not call for any particular comment.

We regret to note that at the last meeting of the Gateshead Town Council the motion for introducing the Notification of Infectious Disease Act into that borough was defeated by a large majority. Nevertheless, the thanks of the community are due to Dr. Abraham and others in the council for strenuously supporting a measure which appears to be urgently called for in this and other large centres of industry throughout the kingdom.

Much regret was expressed in Gateshead at the sudden death of Dr. Charles Green, which took place in that town on February 4. Deceased was for some time medical officer of health for the borough, and recently held several other prominent positions in the town, where he was highly respected.

The Rev. B. Waugh made some remarkable statements at a meeting held at Stockton-on-Tees on February 5. He said that there were at least 200 baby farms in this country, and he asserted that he had possession of contracts for killing babies—one where it was agreed to kill a child in six months, £50 down and another £50 for a death certificate! This horrible statement discloses a terrible blot on our civilization, and the sooner the authorities interest themselves in the mysteries of this loathsome traffic with a view to a remedy, the more it will be to their credit and the good of the country at large.

The influenza, though somewhat rife amongst the population in the North, has not been productive of many serious results. On February 6 a young man, named William English, whilst suffering from the disease committed suicide at Seaham Harbour, by plunging into a manure tank in his garden in which he was drowned before he could be rescued. It is somewhat notable that the disease has mainly attacked persons engaged in out-door employments.

NOTES FROM THE SOUTH.

(From our own Correspondent.)

So far as can be ascertained, the influenza epidemic does not appear to have made itself very seriously felt in the South of England. When, however, the fear of *la grippe* was at its height, the medical officer of health at Portsmouth (Dr. B. H. Mumby), took the very prudent course of publishing a notice to the public, advising them what to do in case of an outbreak. The naval and military commanders-in-chief also issued instructions, under which all men suffering from bad colds were promptly sent to hospital. These timely measures have doubtless prevented a good deal of sickness.

The Eastbourne Board of Guardians has recently taken a somewhat singular step. They have decided to postpone the prosecution of some 750 local anti-vaccinators, pending the result of the deliberations of the Royal Commission on compulsory vaccination. Upon what authority local bodies presume to suspend a law, on the ground that it is obnoxious to a section of the community, and may at some future time be repealed, is not over clear.

Mr. H. P. Boulnois, who has just been appointed borough engineer of Liverpool, is President of the Association of Municipal and Sanitary Engineers. For some years he has been borough engineer of Portsmouth, and in that capacity has watched the completion of the new system of drainage which has been carried out at the great naval port under the supervision of Sir Frederick Bramwell, at a cost of a quarter of a million sterling.

At a recent meeting of the Dawlish Local Board, a mortgage deed was stated to have been received from the Public Works Loan Commissioners for the sum of £700, required to complete the sewerage works. This amount will have to be repaid in 17 years. The same board are about to take energetic measures for the suppression of nuisances arising from cowsheds, and are credited with an intention to give increased attention to the sanitary requirements of the town.

SLACK & BROWNLOW.—The constitution of this old established firm of filter manufacturers of Manchester has recently undergone a slight change, Messrs. H. H. Brownlow and R. S. Brownlow being taken into partnership from December 31, 1889. The former partners, Messrs. E. and F. W. Brownlow will continue to act, and the style of the firm will remain as before.

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REPORTS OF MEDICAL OFFICERS OF HEALTH.

"Something attempted, something done."

BASFORD RURAL (Population, 51,957).—Dr. Boobbyer's report for 1888 is one of favourable statistics generally, though in some respects not quite equalling the exceptionally low returns of 1887. The zymotic death-rate showed a slight increase, as did also the infant mortality rate, though both were considerably below the average, and the general death-rate was higher by ·2, being 14·9 against 14·7 per 1,000. A brief account is given of the zymotic sickness of the district, the system of voluntary notification having worked so well that very few, if any cases, escaped notice. A reduction in the

Typhoid. number of typhoid fever cases was due to the absence of any serious local outbreak. A

Diphtheria. short but severe epidemic of diphtheria in the Carlton division was plainly traceable to infection from Nottingham (whence two small-pox cases were also introduced), and was afterwards spread through the medium of schools. Dr. Boobbyer describes at some length the sanitary work of the year; several small drainage schemes were undertaken, and the water supply received due attention, but there are several districts which stand in need of improvement, in this

Overcrowding. and other respects. Cases of overcrowding were found to be very numerous in 1888, and as usual were very difficult to deal with. The utmost that could be done was to secure the abatement of the worst cases, and draw as much public attention as possible to them and their attendant evils. Among the many directions for improvement which Dr. Boobbyer brings under the notice of his authority, are

Hospital needed. an isolation hospital and disinfecting chamber, the revision of the bye-laws, an extension of

Bye-laws: scavenging. the system of public scavenging, and the reconstruction of midden privies.

BERKSHIRE COMBINED (Population, 145,375).—The supervision of a district, mainly rural in its character, and of wide acreage, necessarily involves a large amount of careful attention to the needs and peculiarities of the various localities, and that this has been afforded to the towns and villages under Dr. W. T. G. Woodforde's administration is evident from that officer's report for the year 1888. There was comparatively little serious illness of a zymotic character during the year, but the most important outbreaks from a sanitary

Diphtheria. point of view were those of diphtheria, a disease which contributed the greatest number to the roll of deaths, though never present in epidemic form. Dr. Woodforde made searching investigations into the causes of the outbreaks. No history of infection was in any instance obtainable as regards any of the first cases, nor was there any evidence to implicate the milk supply; but in many cases the disease was associated with insanitary conditions in

Enteric fever. damp and low-lying localities. Enteric fever caused 17 deaths, occurring in various localities, and often without any traceable cause. A great many improvements of importance were effected throughout the district, the work of the year being chiefly characterized by extreme attention to minutiæ. The table of sanitary work appended to the report contains a reference to almost every form of nuisance or defect, and shows that an immense amount of useful labour was performed. There is, of course, much still to be done, but having once brought the defects under the notice of the several authorities, it is to be hoped that Dr. Woodforde will ultimately succeed in securing his suggested improvements. The year was favourable as regards mortality, the general death-rate for the combined district amounting only to 14·8 per 1,000 against 15·8 in 1887, and the zymotic rate only 1·1 per 1,000.

BILSTON (Population, 22,730).—As regards the sanitary condition of this district during 1888, Dr. Ridley Bailey had little to add to the reports of former years except that a great advantage has been gained by

Water supply. making the water supply continuous. A severe epidemic of small-pox, amounting to

Small-pox. 42 cases, caused considerable labour and anxiety, as also did the prevalence of scar-

Scarlatina. latina, but the deaths were few, and the death-rates, both general and zymotic, were remarkably favourable compared with former years. The death-rate from all causes was 19·6 per 1,000, and from zymotic diseases 0·82 per 1,000.

BIRKENHEAD (Population, 100,093).—Mr. Francis Vacher's annual report for 1888 is as usual a most careful and accurate account of the proceedings of the Health Department, and of the vital statistics of the year. A decreasing birth-rate, indeed the lowest hitherto recorded, 30·7 per 1,000, was accompanied by a low death-rate, 17·8 per 1,000, for which, however, a notable diminution in the mortality from zymotic diseases was largely responsible. With the exception of fevers, all the chief zymotics were below the average. There was not a single case of small-pox; in no year since 1878 has the mortality from measles been so low; scarlatina exhausted itself in the early months of the year; and the number of deaths from diarrhœa (37) was less than half that certified in 1887. The ordinary sanitary operations of the department received unremitting attention. House-to-house inspections of the cottage property in the Borough were regularly made. Gulleys and passage drains were periodically cleansed, public fountains, &c., scoured and kept in order, and the systematic removal of ashpit refuse at stated intervals was carefully superintended. Though the repression of overcrowd-

Overcrowding: cellar-dwellings. ing and cellar-occupation presents exceptional difficulties as the department has no regular night inspector, attempts have been made to check both practices, and with fair success. Even in instances where there has not been sufficient evidence to prove the case in a court of law, steps have been taken to prevent the continuance of the offence. Appended to the report are very full tabular statements of mortality, meteorology, &c., and the addition of a sketch map, showing the distribution of disease, increases the usefulness of the report.

DUBLIN (Population, 350,082).—Sir Charles Cameron examines very closely in his report the vital statistics of 1888, analysing with great care the various factors which constitute the death-rate of the year, and showing in what particulars Dublin is favourably or unfavourably placed in comparison with other cities and towns. As he justly remarks, the relative salubrity of two towns cannot always be ascertained from the mere death-rate of each. Its significance is affected by various conditions, such as immigration, emigration, the relative proportion of the sexes, birth-rate, &c. A really serious factor affecting death-rates is that of age distribution, and in Dublin this is favourable to a low rate of mortality. The proportion of population in the groups of ages having the greatest longevity is excessive as compared with England and Wales, only two English towns, Oldham and Manchester, being more favourably circumstanced. There is, however, a relatively greater mortality in the whole population of Dublin. Child mortality is still above the average of the 28 towns, though there was a substantial decline in this death-rate during 1888. Of the 8,894 deaths registered, 2,843 were those of children under one year, the ratio to total deaths being 32 per cent. Of these an appalling number were uncertified. The general condition of the public health was much more satisfactory in 1888 than it has been for some time past, and this state of things Sir Charles Cameron considers to be largely due

Tenement houses. to the improved condition of the tenement houses. Referring to the subject of the disposal of sewage, he states that the city is peculiarly well adapted for the water carriage system.

Sewage disposal. "No doubt the contamination of the Liffey by the sewage discharged into it is an evil which steadily grows greater as the water-closet

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system becomes more extended, but the abatement of the Liffey nuisance is a task more easily accomplished than the purification of the Thames or the Clyde. I am of opinion that a method of rendering the Dublin sewage innocuous could be adopted at a moderate cost, provided that a clarification or precipitation scheme was adopted." The sanitary work of the year was, as usual, very comprehensive. Many public and private buildings were examined, and structural and other defects of various kinds were remedied. The diminished prevalence of zymotic diseases affected but slightly the disinfecting operations, for though the number of persons who used the disinfecting chamber was fewer than in 1887, the number of articles passed through it was much greater. The corrected death-rate for 1888 amounted to 24·5 per 1,000.

Disinfecting apparatus.

EPPING RURAL (Population, 21,755).—The deaths registered during 1888 were 354, which equalled a rate of 15·5 per 1,000. The seven principal zymotic diseases caused 43 deaths, or a rate of 1·8 per 1,000, 20 being due to whooping-cough alone. Dr. Trevor Fowler gives statistics for the past 10 years, showing that, next to diarrhœa and dysentery, the mortality from whooping-cough far exceeds that from any of the diseases of this class, and as the greater or less prevalence of zymotic diseases is commonly quoted as an evidence of the salubrity, or the reverse, of a district, the fact that the zymotic death-rate is due by nearly 50 per cent. to whooping-cough, cannot, he thinks, be too prominently brought forward. There has also been a remarkable freedom from typhoid and other allied fevers, showing that a good sanitary condition has been maintained. The water supply is good, and the drainage of the more populous localities satisfactory. Dr. Fowler calls attention to the importance of insisting upon provision for the proper disposal of sewage upon all new estates laid out for building.

Prevalence of whooping-cough.

Freedom from typhoid.

Water supply: drainage.

ISLE OF WIGHT RURAL (Population, 28,895).—Dr. Joseph Groves's annual report for 1888, is, as usual, an exceedingly careful production, and abounds in useful suggestions. He considers that with all the advantages of climate enjoyed by the Isle of Wight, the absence of extreme poverty among the people, and with no very densely populated area, it should have a low death-rate. Yet in the year under notice, the death-rate, 17·3 per 1,000, was higher than any previous year, and above the average of the rural districts of England and Wales. The sanitary history of 1888 showed a general prevalence of zymotic diseases; scarlet fever, measles, whooping cough, diphtheria, and enteric fever all coming under notice in various localities. The want of any means of isolation or of notification made the work of controlling their spread very difficult; school closing was resorted to where necessary, and disinfectants perseveringly applied. Dr. Groves reports that there is a great deficiency of good drinking water in many places, and though some permanent improvements in the supply were effected, a great deal yet remains to be done. Cases of typhoid and diphtheria were traced to the use of polluted water, and sometimes to an escape of sewer air. As the health officer remarks, it seems to require, too often, the leverage of disease to get improvements effected. Year after year he has advised the adoption of bye-laws, and though there is a general opinion in their favour and examples of their necessity are by no means wanting, yet the years pass by and things remain in very much the same unsatisfactory condition. The Board is fortunate in possessing an officer so energetic and persevering as Dr. Groves, and it is sincerely to be wished that his repeated recommendations for improvement of the sanitary condition of so important a health resort as the Isle of Wight were carried into effect.

Hospital needed.

Water-supply defects.

ISLINGTON (Population, 346,563).—The year 1888 was distinguished for its low rates, and Islington afforded a notable example, for its birth-rate, 27·6 per 1,000, and its death-rate, 14·0 per 1,000, were the lowest ever recorded in the parish. Dr. Meymott Tidy gives a brief account of the extent of prevalence of the various zymotic diseases. Measles, whooping-cough, and scarlet fever, though epidemic at different periods of the year, were less fatal than they usually are. The deaths referred to "fever" amounted to 49, and exceeded by 10 the mortality of the previous year. In this connection Dr. Tidy remarks that he has found that people who go away for a holiday often return with fever upon them instead of having gained health by the change. A comprehensive table of the sanitary work of the year shows a total of 42,047 inspections of houses and premises and 10,198 improvements effected in 2,928 premises. The use of disinfectants was freely resorted to, carbolic acid being employed during the summer months in watering some of the streets. Courts were dusted with disinfecting powder, as were also the channels of certain thoroughfares used as market-places; whilst in the hottest weather the dust-bins were disinfected by the dustmen after the removal of the refuse. Dr. Tidy reported, under "Torrens's Acts," on the condition of some unwholesome dwellings near the Holloway Road, in which he finds it impossible to effect any permanent improvement. He therefore urges their demolition. For the improvement of another insanitary area, he has prepared a scheme, under "Cross's Acts," which has been duly reported to the London County Council.

Fever.

Dwellings of the poor.

MIDDLESEX AND HERTFORDSHIRE COMBINATION (Population, 93,954).—Mr. T. W. Thompson entered upon his duties in this district in an exceedingly favourable year, the death-rate of 1888 being unusually low—14·9 per 1,000—the zymotic rate below that of the two previous years, and the rate of infant mortality the lowest on record since 1881. He has therefore been the better able to devote his attention to an examination of the needs and requirements of the various sub-districts, and to projecting measures of sanitary improvement. An analysis of the death returns shows that the diseases responsible for the largest share of deaths, viz. bronchitis, pneumonia, pleurisy, rheumatic fever (with its frequent consequence, heart disease), are so evidently associated with climatic conditions, such as cold and damp, as not to be wholly preventible. Mr. Thompson thereupon urges the necessity of drying the soil, especially the sites of dwellings, &c., measures calculated not only to diminish this class of disease, but also to affect the prevalence of measles, diphtheria, and others of the zymotic order. The success which has attended past labours is certainly an encouragement, and by following closely on the lines of his predecessor, Dr. Saunders, and with equal earnestness directing the progress of reform, Mr. Thompson, not unreasonably, hopes to bring about a further reduction in the mortality, and an improvement in the sanitary condition of the area under his charge. A return is made for each separate district, but the year being comparatively uneventful, there was but little to call for special notice.

Dry the soil.

RASTRICK (Population, 9,592).—Very favourable death-rates were recorded for this district for 1888, the total annual rate, 16·5 per 1,000, being the lowest hitherto recorded. Dr. F. F. Bond makes due allowance for climatic influences in accounting for this decrease, and for a diminished prevalence of zymotic disease, especially measles. A number of cases of typhoid fever were associated with sanitary defects, but a series of 8 cases in one house were indubitably the result of infection contracted in the first instance at Huddersfield. A number of small improvements were carried out during the year, and the routine work was well attended to. By the adoption of the pail-closet system, now decided upon by the Board, the most frequent sources of nuisances in the district will apparently be removed. The large proportional fatality from diseases of the chest

Typhoid.

Pail closets.

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calls for certain measures of reform in the air space and ventilation of houses, and in the condition of the subsoil. The town possesses no means of isolating cases of infectious disease, a want to which Dr. Bond has very properly drawn attention.

Hospital needed.

St. Pancras (Population, 244,200).—The death returns for 1888 were most favourable, the total mortality being 230 below that of 1887 and 264 below the decennial average. For the first time on record the death-rate fell below 19 per 1,000, and it was but little above the metropolitan average—18·5 per 1,000. An analysis of the mortality shows a considerable decrease under most headings. Zymotic diseases were less fatal by 74 deaths, though enteric fever, diphtheria and measles were in excess of the average. Dr. John Sykes shows the localities chiefly affected by the two first-named diseases by means of a spot-map, and it is interesting to observe the peculiar characteristic preference of diphtheria for high ground. The mortality was lowest in the lower and southern districts, increasing gradually towards the northern localities. Dr. Sykes is inclined to regard school-closing in the prevention of measles as of doubtful value, as an epidemic of measles rapidly expends itself, and by the time it has been found necessary to close the schools, is generally on the wane. An important point to decide is whether the children are any the less likely to come into contact while playing together promiscuously out of school, than they are in the class-rooms or school-ground. It was found that the very young children not attending school were a fertile source of the disease. Dr. Sykes considers that some earlier action than the crude method of closing schools appears to be necessary, since to close a school is to admit that it has been allowed to become generally infected to a dangerous extent. It would not be justifiable to close a large school for a few cases of measles, yet those cases may be the forerunners of a general outbreak. A large amount of general sanitary work was accomplished during 1888; house-to-house inspections were carried on regularly, drainage and sewerage improvements were effected, and a large number of nuisances were abated. Dr. Sykes makes several suggestions for improvement, which, though apparently of a minor sort, are of great value from a public health point of view. These relate chiefly to the flushing and ventilation of sewers, removal of refuse, &c. The usual tables and lists are appended to the report, the large spot-map being a notable addition, whereby, from the proximity of the blocks of houses and the narrowness of the intervening spaces, an approximate idea of the density of population and its distribution may readily be gathered.

Reduced death-rate.

Diphtheria.

Measles and school-closing.

Tendring Rural (Population, 26,500).—Dr. John W. Cook's annual report for 1888 gives rather less favourable statistics than those published for 1887, the death-rate, both general and zymotic, showing an increase. Whooping-cough was unusually severe, and caused 13 out of the 31 deaths from infectious diseases, and chest affections occurred in considerable numbers, so as fully to account for the higher rates. A certain amount of useful and permanent work was effected, mainly in the direction of sewer extension, and the procuring of a good water supply, but there are several localities which are urgently in need of improvement in these respects, and to these Dr. Cook draws attention. He spoke strongly against the adoption of water closets at Brightlingsea on account of the oyster beds in the river near the various outfalls, but advocates a system of earth closets to be regularly emptied.

Whooping-cough.

Sewers.

Water supply.

Brightlingsea.

Wellingborough Rural (Population, 24,760).—Dr. J. Howell Thomas had little of interest to record for 1888. The statistics generally were favourable, the death-rate, 14·5 per 1,000, being less than in the previous year, and the zymotic rate amounting only to 0·8 per 1,000. The epidemics of the year were mild, and fatal cases of sickness unusually few. A fair amount of sanitary work was carried out, chiefly of a routine character. A weekly system of scavenging has been adopted in the various villages, and has worked satisfactorily, except that in some instances the smell from the carts has been made the subject of complaint. Steps have been taken for providing a supply of water to the Rushden district, and thereby effecting a much-needed improvement in that growing locality. In referring to this matter, Dr. Thomas very judiciously reminds the sanitary authority that every town should, for financial reasons, have its water supply in its own hands.

Scavenging.

Water supply at Rushden.

ILLUSTRATED SANITARY PATENTS.

Should any of our readers require information relative to the taking out of patents for inventions, either English or foreign, the "Patent Correspondent" of the Sanitary Record *will be pleased to give them the benefit of his experience and assistance. Communications to be addressed,* Patent Correspondent, Sanitary Record Office, 13, Waterloo Place, S.W.

2,938. (1889.) An Automatic Disinfecting and Deodorizing Vessel for use in Flushing Cisterns of Water-Closets, Urinals, and the like. George Henry King, 101, Ashmore Road, St. Peter's Park, Paddington, W. [6d.]

This invention consists of a vessel made of metal or other suitable material, cylindrical or of any other convenient shape, the object of such vessel being to hold permanganate of potash or any other disinfecting and deodorizing substance soluble in water. It may also be made in various sizes. At the lower end of the vessel a bottom is fixed, from the centre of which a nipple or reservoir extends downwards. In this reservoir two or more small holes are formed.

Over the bottom and inside the vessel a plate or disc of metal or other suitable material is placed. This plate may either be perforated with two or more small holes, or it may be slightly punctured round its edges in about three places; the small points being downwards, and resting on the surface of the bottom, thus keeping the main surface of the plate from actual contact with the bottom, and allowing a free passage for air to escape, and for the water to come into contact with the disinfecting substance contained in the body of the vessel.

For cleaning purposes the disc is made removable, and a wire stem is attached to it to facilitate removal. On the upper surface of the vessel a movable cap is placed, in the top of which is a vent hole. The cap is secured to the body of the vessel by a "bayonet," or other suitable joint. And a simple suspension contrivance is provided to hang the vessel in its proper position in the cistern, that is, with its lower part a little below the surface of the water.

The action of the apparatus is as follows:—The vessel is filled with the disinfecting and deodorizing material and suspended in the cistern as described. The water enters by the holes in the reservoir, and thence through the holes in the plate, then coming in contact with the disinfecting substance, a portion of which is dissolved and runs down into the reservoir in the form of a saturated solution.

While the water in the flushing cistern is at rest the saturated solution issues from the reservoir in a small threadlike stream, but when the water is drawn the sucking action set up empties the reservoir of the saturated solution it always has in reserve, which mixing with the water the whole is converted into dilute disinfecting fluid and discharged from the cistern.

Claim.—Portable automatic vessel for use in flushing cisterns for the purpose described, &c.

3,563. (1889.) Improvements in and relating to Water-Closets. Henry Lord, 25, Yorkshire Street, Burnley, Lancaster. [6d.]

This invention of improvements consists in so arranging

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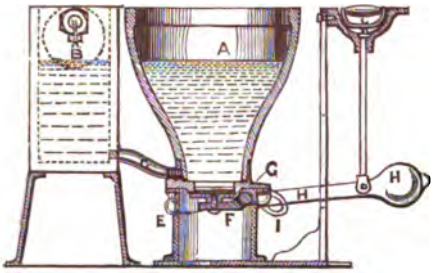
the water supply cistern in combination with the closet pan or basin, that water from the cistern will flow into the pan or basin to the same level as that in the cistern; an ordinary ball tap being used to regulate the height or level of the water in the cistern. A suitably arranged flap or clack hermetically seals the lower portion of the pan when the closet is not in use, but when the contents of the closet pan are desired to be flushed to the sewer, the flap or clack is lowered by pulling a handle.



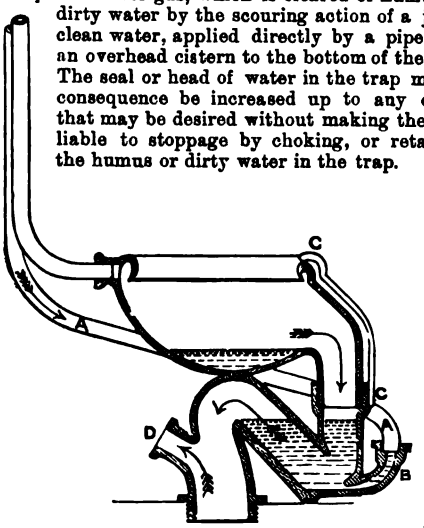
The figure shows a sectional elevation of a closet pan apparatus constructed in accordance with this invention. A is the basin or pan of the closet, on one side of which is a water supply cistern B, having tube C as a passage between the cistern and the basin. The water will, therefore, rise in the basin or pan to the same level as that in the cistern: an ordinary ball tap being employed to regulate the height of water in the cistern.

The clack or flap E is secured to a lever F hinged in the ears or lugs G and so connected to a weighted lever H and a slotted lever I as to hermetically seal the lower portion of the pan when the closet is not in use; but when the contents of the closet are desired to be flushed to the sewer, the flap or clack E is lowered by the pull handle J.

Claim.—The arrangement of a water-closet as described above.

4,220. (1889.) IMPROVEMENTS IN SEWER AND HOUSE DRAIN TRAPS. WILLIAM SMITH, 84, Fountainhall Road, Aberdeen, N.B. [6d.]

The underflush trap, the subject of this invention, is a water trap for sewer gas, which is cleared of humus or dirty water by the scouring action of a jet of clean water, applied directly by a pipe from an overhead cistern to the bottom of the trap. The seal or head of water in the trap may in consequence be increased up to any depth that may be desired without making the trap liable to stoppage by choking, or retaining the humus or dirty water in the trap.



The figure represents a water-closet having, in addition to the ordinary flushing rim and pipe, a separate pipe A A carried down from a cistern called the underflushing cistern, which may be either a separate cistern or a separate valve in the ordinary flushing cistern, to the socket B in the bottom of the trap.

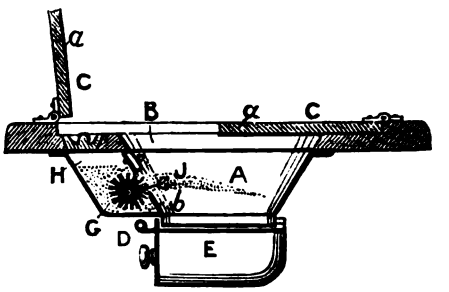
The principle of its action is the retention of the stream of water from the cistern at a uniform bore or cross sectional area in the pipe A A to the point of application B at the bottom of the trap, thereby conserving the energy of the water for application within the trap upwards from the bottom in the direction of the arrow to sewer. The air pipe C relieves any compressed air in the pipe A, and is inserted immediately above the surface of the water. A ventilating pipe D is inserted below the upper bend of the trap where the underflush current will not infringe upon it.

The principle of this invention is also applicable to main house drains; and special arrangements are made for the construction of underflush separate cisterns working in combination with the ordinary flush cistern; and also for appropriating a portion of the ordinary flush cistern for underflushing purposes by an arrangement of special valves where circumstances render such a combination desirable or necessary.

Claim.—The application of a jet of water directly by a pipe from an overhead cistern to the bottom of a trap in the manner and for the purpose described above, &c.

7,556. (1889.) IMPROVEMENTS IN NIGHT COMMODES AND CLOSET FITTINGS. WILHELM TEUFEL, Stuttgart, Wuerttemberg, Germany. [6d.]

This invention relates to night commodes and closet fittings, and has for its purpose the provision of means for self-acting disinfection during use, thereby obviating the pollution of the atmosphere, especially in sick rooms.



The night commode, or closet, is provided, as shown in the figure, with a double lid C, the two wings of which when opened can serve as arm rests. Below seat B a removable pan, or receiver E, for the fæcal matter is provided, which is adapted to be closed by means of a slide D. The angular funnel A has a slot, or opening *b*, through which extend the bristles of a revolving cylindrical brush G. Above the latter, and forming the upper edge of the slot *b*, a plate J is provided, which is adjustable relatively to the bristles, and serves to bend the bristles when about to enter into slot *b* so as to give them an elastic or thrusting movement. The cylindrical brush is revolvable in the lower portion of a tray, or box H, serving as a receptacle for the disinfectant powder, which, when the brush is revolved, is taken up by the bristles and thrown through slot *b* across the funnel and into the pan, thereby producing a continuous disinfection of the fresh fæcal matters, and neutralizing offensive odours.

The brush operates slowly and noiselessly while the seat is occupied, by means of a suitable mechanism or clockwork, which is put in motion by the weight of a person sitting on the seat; and the action of the brush may be discontinued by the pressure being released, or by the closing of the lids, which may be so arranged as to control the automatic sprinkler by suitable device, and similarly the opening of the lids may cause the sprinkler to operate.

The sprinkling device, which may be actuated by any convenient winding contrivance, is applicable to closets of every description, and works without any disturbance or unpleasantness.

Claim.—The disinfecting apparatus applicable to

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night commodes, or closets, as particularly described and illustrated in the specification above quoted.

11,974. (1889.) AN IMPROVED MANUFACTURE OR PREPARATION OF ANTISEPTICS. FREDERICK GEORGE ADAIR ROBERTS, ARTHUR SHEARER, and WILLIAM BRANTINGHAM GILES, Wharton Road, Stratford, Essex. [4d.]

This invention relates to the manufacture or preparation of antiseptics in a dry form, and consists in intimately mixing salicylic acid with an alkaline sulphite or sulphites.

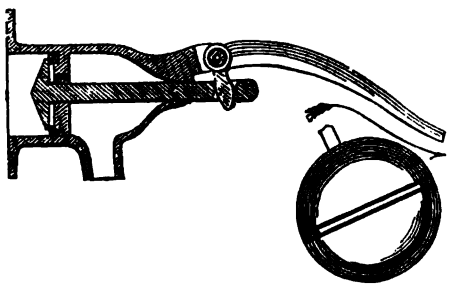
One of the chief obstacles to the ready use of salicylic acid as an antiseptic is its comparative insolubility in cold water, beer, wine, and other fermentable liquors or watery fluids. The above inventors have discovered that if salicylic acid be mixed in certain proportions in the dry state with certain soluble sulphites also in the dry state and in powder, the mixture so obtained dissolves readily and completely in the aforesaid fluids. The sulphite most suitable for this purpose are soluble compounds of sulphurous anhydride with the alkalies, such as sulphite or double sulphite of sodium, sulphite of potassium, or sulphate of ammonia; preferably of these sulphite of sodium is employed. The product of this admixture is a dry powder, which is readily and conveniently transportable, and which readily dissolves in cold water and the other fluids enumerated above.

The following is the best way for carrying this invention into effect:—Ordinary sulphite of sodium is subjected to heat until it becomes dehydrated sulphite of sodium. To this, after reducing to powder by grinding, if necessary, is added about an equal proportion of salicylic acid, the ingredients being thoroughly incorporated, preferably by trituration. The dry product can be formed into tabloids, or be put into packets, and be dissolved when required for use.

Claim.—The manufacture or production of an antiseptic as described.

14,631. (1889.) IMPROVEMENTS IN BALL-COCK VALVES. CHARLES THOMAS GANN, 8, Hugon Road, Wandsworth Bridge Road, S.W. [6d.]

This valve consists of a brass cylinder tapered at one end, with a projecting lug to hold a fulcrum. See figure.



Inside the cylinder is a piston and rod, the outside end of the rod being attached to a ball lever, and is actuated by the rising and falling of the water. Between the inner surface of the piston and the end of the cylinder is provided a perforated seating, at the edge of which a groove is turned for attaching an indiarubber washer; and on the opposite side of the perforated seating there is a water space and outlet.

When the water-level falls, the lever upon which the ball is fixed thrusts in the piston; this leaves a space between the seating and piston for the water to rush in, the piston being between the main and the seating.

When the cistern, or tank, is full, the ball lever (actuated by the ball and the pressure of water on the outside surface of the piston), pulls or draws the inner surface of the piston up against the indiarubber washer, thus instantly closing the outlet.

Claim.—In ball-cock valves the combination and arrangement of parts as described above.

LIST OF APPLICATIONS FOR PATENTS

RELATING TO SANITATION.

FROM JAN. 7 TO JAN. 24, 1890.

[*This List is specially compiled for the* SANITARY RECORD *by Messrs. Rayner & Cassell, Patent Agents, 37, Chancery Lane, Holborn, from whom all further information relating to Patents may be had on application, gratuitously.*]

January 7.—No. 309. THOMAS KAY, 8, Quality Court, London. Improved economical process in the treatment of sewage.

January 8.—No. 341. CHARLES NIELD, 119, Devonshire Street, Sheffield. Improved water filter.

No. 364. HENRY HARRIS LAKE, 45, Southampton Buildings, London. An improved sanitary bandage. (Th. Ellebye, Denmark.)

January 10.—No. 479. ARTHUR MARSHALL, 28, Southampton Buildings, London. An improvement in sewer inverts.

January 11.—No. 509. WILLIAM REYNOR, 266, North End Road, London. Facilitating and simplifying the testing and flushing of house drains.

No. 564. CHARLES ROBERT EDWARD BELL & ERNEST DALBY REEVE, 4, South Street, Finsbury, London. Improvements in and connected with filters for water and other liquids.

January 13.—No. 579. WILLIAM REYNOR, 266, North End Road, London. Staunching defective house-drains without taking up floors or opening ground in basement.

No. 586. ALFRED FLINT, 84, Centurian Road, Brighton. Testing house-drains.

January 14.—No. 648. EDWARD MARTIN KNIGHT, 11, Wellington Street, Strand, London. Certain improvements in filters.

No. 676. LEONIDE APOSTOLOFF, 46, Lincoln's Inn Fields, London. An improved elevator for raising fluids and solids.

January 15.—No. 747. WALTER HARWAR, 24, Gray's Inn Road, London. Collapsible urinal attachment to water-closet lids, &c.

No. 777. FRANK STEPHEN STREETER, 53, Chancery Lane, London. Improvements in water-waste preventors.

January 20.—No. 983. HARRY GRIMSHAW, 70, Market Street, Manchester. Improvements in soap and soap-powder for use with hard and sea waters.

No. 1,017. WILHELM DAMMANN, 4, South Street, Finsbury. An improved process for rendering tar-oils soluble in water, and the production of disinfectants and other useful products therefrom.

January 22.—No. 1,133. REGINALD WILLIAM JORDAN, Old Market Street, Bristol. An improved sanitary combination cinder-sifter and ash-tub.

January 24.—No. 1,252. PICKLES PARKER, 58, Low Street, Keighley, Yorkshire. Improvements in the construction of water filters.

No. 1,295. CHARLES SHAW, 55, Chancery Lane. Improvements in flushing apparatus for water-closets.

No. 1,307. ALEXANDER CAPILLERY, 47, Lincoln's Inn Fields, London. Improvements in or connected with apparatus for filtering liquids.

SPECIFICATIONS PUBLISHED.—1889.

499. DANCHELL. Separating solids from liquids. 8d.
2,692. POOLE & MCDONALD. Testing joints of drainage pipes. 8d.
3,125. MATHER. Filters. 8d.
15,190. ROHRBECK. Disinfecting. 8d.
3,563. LORD. Water-closets. 6d.
5,353. SMITH. Soap. 4d.
7,556. TEUFEL. Night-commodes, &c. 6d.
94. HARGREAVES and Others. Treating lime refuse. 8d.
3,700. DEELEY. Flushing cisterns. 8d.
15,646. TUPPER. House refuse destructor. 6d.

The above Specifications may be had from Messrs. Rayner & Cassell, Patent Agents, 37, Chancery Lane, at the prices quoted.

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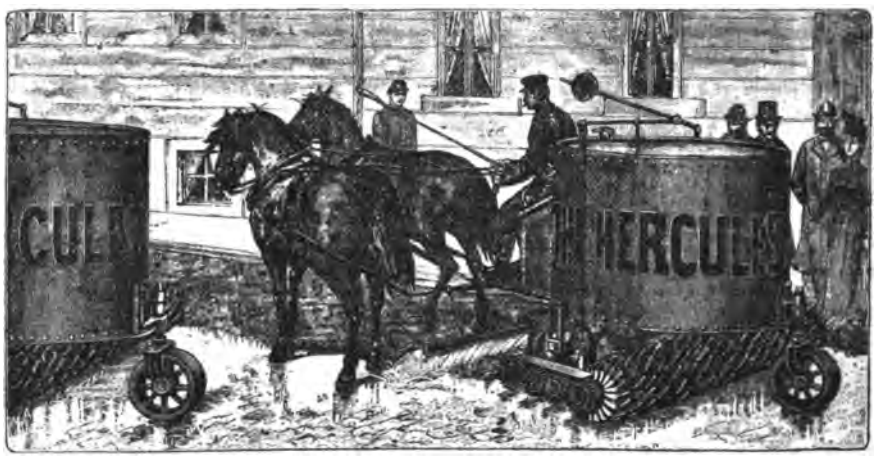
NEW INVENTIONS.

THE HERCULES STREET-CLEANSING MACHINE.

We were recently afforded an opportunity of seeing this machine, which has recently been introduced into England, at work in the neighbourhood of the Strand, and we are bound to say it accomplished its work in a most satisfactory manner. The apparatus (of which we append an illustration) consists of a circular water-tank, holding about 300 gallons of water, mounted on three wheels, with a pipe connected with a sprinkling tube fixed across and close to the pole in front of the machine, and is drawn by two horses. Under the tank in the rear is a screw-shaped revolving roller, composed of strong pieces of vulcanized india-rubber in sections, which act like the squeegees now so commonly used by the orderly boys. This roller rotates on the ground in an opposite direction to that of the wheels, and in conjunction with the water which flows from the sprinkling tube, thoroughly cleanses the roadway, carrying the mud and solid matter to the gutter, whence the liquid portion flows into the gulleys to the sewers, the solids being left to be taken away by the scavengers' carts. The india-rubber roller, as well as the water-valve, is regulated at will by the driver from his seat, he being the only person required for working the machine. Upon asphalte and good wood paving it is said that one horse is sufficient to work the apparatus, two horses being required only upon granite or macadamized roads with an incline. The machine is certified to cleanse 7,250 square yards per hour.



We cannot attempt to follow the inventors in setting forth all the advantages claimed for the apparatus, but they certainly have valuable testimony in its favour from various foreign authorities, from the vestry of St. Martin in the Fields, and from the works committee of St. James and St. John's, Clerkenwell; the former speaking especially of its value in clearing away the snow, one of the greatest difficulties with which our local authorities have hitherto had to contend.

Amongst the advantages urged in favour of the "Hercules," is that the ordinary street watering carts may be dispensed with, and a large quantity of water thereby saved. This system moistens the dust and dirt, but does not remove it, the "Hercules" on the contrary not only thoroughly saturates, but clears it away simultaneously.

From what we have seen of this machine we believe it will prove a valuable aid to our various local authorities throughout the kingdom in more rapidly and effectually cleansing the thoroughfares, and we think it should prove a cheaper mode of doing this than the means now employed. Mr. A. Mendelssohn, of 17, Silk Street, E.C., the sole agent for the United Kingdom, will be pleased to give any further information, and give facilities for seeing the machine in action

THE EWBANK CARPET SWEEPER.

Messrs. Entwistle & Kenyon have submitted to our notice a new carpet sweeper which is worthy of commendation both from the hygienic and domestic points of view. In the sick-room it is invaluable, as from its construction no unwholesome dust such as may arise in the process of sweeping, especially where zymotic disease is present, can be diffused in the atmosphere. The mere prevention of the usual "kicking up a dust" in the process of sweeping an invalid's room is also most valuable. Who amongst womenfolk does not remember the preparations for sweeping the bed-room in the case of illness, especially of a chronic character; the covering up the bed and furniture and the drawing of the curtains around the unhappy invalid until the sweeping process is concluded. But as the Ewbank Sweeper collects all the sweepings into a closed receptacle, there is no need for any such preparations. Another great feature is the absence of noise. The Ewbank Sweeper is propelled by the operator over the carpet in a perfectly noiseless manner, so that the measured thumping of the old broom, so trying to the nerves of persons out of health, is entirely dispensed with. As no dust is raised there is no consequent dusting of the furniture of the bed-room, and no deposit of the obnoxious material in corners and crevices not accessible to the dusting brush. This feature is specially valuable in the case of drawing-rooms with their multiplicity of *bric-a-brac*, libraries with their book-laden shelves, and living rooms in general. Other advantages of the Ewbank are its lightness and the ease with which it is propelled over the carpet. For gentle exercise it might well be recommended to mistresses of small establishments and their unoccupied daughters, and would form an admirable substitute for the usual walk "to look at the shops," with much advantage to their moral and physical health, and the pocket of paterfamilias. The manufacturers are Messrs. Entwistle & Kenyon, Ewbank Works, Accrington, Lancashire.

The Worcestershire County Council have decided, upon the recommendation of Mr. Hastings, to divide into wards the Local Board district of Balsall Heath, which has long been felt to be unwieldy. It was decided to divide the district into four wards, each returning three members, the number of the Board being thus increased from nine to twelve. The new system will, it is presumed, receive the necessary confirming vote of the Council.

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LAW REPORT.

Private Slaughter-houses in Bradford.

Mr. Gainsford Bruce, Q.C., M.P., the Recorder, at the adjourned Bradford Christmas Quarter Sessions, at the Town Hall, on January 10 and 12, heard an appeal respecting an order made by the Bradford Corporation to compel Mr. George Schussler, pork butcher, of Park Road, Manchester Road, to close his private slaughter-house. The licence of the premises had been revoked on the ground that the slaughter-house was not suitable for the purposes for which it was used. Mr. Schussler appealed on the following grounds:—(1) That the licence was not duly revoked; (2) that the slaughter-house was not a nuisance; (3) that the premises were suitable for a slaughter-house; (4) that the notice of revocation was bad in law; and (5) that the order and determination were wrong in fact and in law. Mr. Waugh and Mr. W. Beverley (instructed by Messrs. Wade, Bilbrough, Booth & Co.) appeared for the appellant, and Mr. Mellor and Mr. Kershaw, acting upon the instructions of the Town Clerk (Mr. W. T. McGowen), were for the respondents, the Corporation.

Mr. Mellor, in stating the case on behalf of the corporation, said that Mr. Schussler was a pork butcher in a large way of business. The present proceedings were brought under certain powers given to the Urban Sanitary Authority by the Bradford Waterworks and Improvement Act, 1868, It was under section 31 of that Act that the proceedings were taken. The section was divided in three sub-sections, which really included everything connected with this appeal. The first sub-section was: "The corporation from time to time may grant licences for the use of buildings and premises as slaughter-houses and knackers' yards for such periods of not less than one year as the corporation think fit; and for every such licence may demand any sum not exceeding 5s." The second sub-section said: "The corporation may revoke or suspend any present or future licence for any slaughter-house or knackers' yard when in their judgment the same is a nuisance, or"—which would form a very important feature in this case, indeed the most important feature, if their instructions were right—"is not suitable for a slaughter-house or a knackers' yard, as the case may be; and in case of any such revocation or suspension the corporation shall give notice thereof to the owner or occupier of such slaughter-house or knackers' yard." The third sub-section was: "If the owner or occupier of any slaughter-house or knackers' yard at the passing of this Act duly licenced by the corporation thinks himself aggrieved by the revocation or suspension of his existing licence he may appeal to the next Quarter Sessions, whose order thereon shall be conclusive; and pending an appeal he shall not be obliged to discontinue such slaughter-house or knackers' yard." After reading these sub-sections, Mr. Mellor said he would, if necessary, in the course of the case, contend that the second sub-section could only be intended for the protection of an owner or occupier of a slaughter-house where the judgment which the sub-section empowered the corporation to use was exercised in a capricious or unreasonable manner; otherwise it seemed to him that the powers given to a corporation in a crowded town like Bradford would be quite emasculated. He did not say that they would prove the premises to be a nuisance—that was unnecessary for their purpose. All that they intended to show was that they were unsuitable for a slaughter-house. The Recorder had before him the order of revocation. That the place was duly licensed when this order was made was admitted by the notice of appeal. He would show that the licence was granted both to the individual and the premises. Section 61 of the Public Health Act of 1848 compelled every building used as a slaughter-house to be registered at the office of the Local Board. That in this case would be the Town Clerk's office, and the entry of such registration was January 29, 1855. The entry was duly made in the registry of slaughter-houses at the office of the Town Clerk. On November 14, 1860, certain alterations were permitted on the part of the corporation; and one very important matter arose here, because upon the plans then submitted to the corporation there was not disclosed an open midden which was now in very close proximity indeed to the slaughter-house. In 1866 another Act of Parliament was obtained, in which powers were given to take over various slaughter-houses and markets for a lease of 999 years. The object of the measure was to give the corporation as far as possible complete control and management over these slaughtering places. This was done at a cost of no less than £5,000 a year. Having got these powers, the corporation proceeded to take steps for erecting public abattoirs outside the crowded parts of the town; and there were now two such places in existence. Before they were made Messrs. Lockwood and Mawson were instructed to travel on the Continent in order that the abattoirs to be erected in Bradford might be constructed upon the very best principles. In due course the present abattoirs came into existence, and then it was that the corporation, slowly and by degrees, so as not in any way to cause any hardship to any individual, gradually revoked the licences of the various private slaughter-houses throughout the town. The second abattoir was finished in 1873. Since that year the number of private slaughter-houses had been reduced from 223 to 15. These figures showed that the corporation, in using their powers, had exercised a wise discretion, and had not dealt harshly with the various persons whose slaughter-houses they had resolved to close. There was a very important feature in connection with the appellant's premises, and it was that this slaughter-house was the only swine slaughter-house that was left in the town. Several medical gentlemen would be called, and he expected that there would be no dispute on their part that there was greater danger to health in the slaughtering of pigs than existed in connection with the slaughter of any other animal. He believed it was a medical fact which would not be denied that the blood if not very soon swept away after the pigs were killed was very well calculated indeed to produce fever—scarlet fever particularly—and other ailments deleterious to the public health. The Recorder had had a view of the premises where the appellant carried on his business. Unfortunately in one respect the view took place at a period of the week, if he might say so, singularly favourable to the appellant from his point of view. Without desiring to say anything against the appellant with reference to the Recorder's visit, the appellant, like everybody else would have done, probably had his premises as far as he could well watered and garnished. They did not desire to suggest that the appellant did not carry on his business in a proper manner. He had no doubt that as far as he was able he endeavoured to keep his place—where 20 or 30 pigs were killed a week—in as sanitary a condition as possible. Mr. Mellor went on to say that he would call witnesses, after which he would ask the Recorder to say that the corporation, in doing what they had done, had exercised a wise discretion, and in revoking this licence had only done their duty with reference to a state of things which at any time was calculated to produce fever and pestilence. If the licence were not revoked it seemed to him that the premises were calculated to be a perpetual menace to the people of Bradford.

A discussion took place between the Recorder and Mr. Mellor and Mr. Kershaw as to what was meant by the premises not being suitable. On behalf of the corporation it was contended that suitability of premises included their situation with relation to the adjoining neighbourhood, but the Recorder expressed an opinion that it referred to its structural character, and that there was a broad distinction between licences granted before and after the Act of 1868, those granted after being issued only from year to year, and liable to be refused at the end of each twelve months.

The Deputy Town Clerk (Mr. Joseph Rawson) produced the minutes of the proceedings of the sub-committee

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of the Sanitary Committee appointed on September 18, 1889, to inspect the place. There were, he said, only about six places in the borough to which there was the least objection, and they were licenced from year to year. On October 8 the Town Council confirmed what the committee had done, and revoked the licences granted to certain holders of private slaughter-houses in Bradford. He could not tell how many slaughter-houses were on the register and existing in 1868, because it would appear that the numbers in the book went straight on, and, supposing a certain number had been used for a licence, and that licence was given up, the number would not be used for another licence. No licence was granted to the appellant's premises under the Act of 1868. Whatever licence there was to these premises it was in existence before 1868. The licence had not been an annual one, and had not been renewed. He could not say whether it was in consequence of an opinion expressed by the present medical officer of health (Dr. MacLintock) that all butchers ought to use the public abattoirs that the appellant's licence had been taken away. Until the written notice of October last he was not aware that any written communication had been sent to the appellant with regard to the matter.

The Borough Surveyor (Mr. J. H. Cox) put in plans which he had prepared of the premises. The area of the premises occupied by the appellant himself was 415 square yards, with an open space of 83 yards, or one-fifth of the total. In his opinion the premises were unsuitable for slaughtering purposes, mainly on account of their crowded state. They were too confined, and he did not think there was sufficient ventilating space. The premises really were well surrounded on every side. There were not at the slaughter-house sufficient appliances for conveying away the blood. Blood was very objectionable stuff in the sewage. In public abattoirs there were special appliances for preventing the blood from running into the sewers. The blood at such places was put into tanks, which were regularly cleared and cleaned, and the blood was ultimately disposed of. If the appellant's licence were taken away the premises would be useless for the purposes of his trade, but they might be used for workshops. They would also act as storehouses. If the appellant turned the premises into stables they would be a nuisance still. If he went to the public abattoirs he would have to pay tollage. In addition to that, he would have to find two men to kill the animals. The change would undoubtedly necessitate the employment of a horse and cart for the conveyance of pigs and carcases. No doubt the appellant would by the change be put to extra trouble and expense, but he could not say whether it would cost him £200 or £300 a year extra.

The Medical Officer of Health for Bradford (Dr. MacLintock) stated that some months ago, in company with other gentlemen, he made an examination of the appellant's premises, and as a result of his investigations came to the conclusion that the premises were decidedly unsuitable for the purposes for which they were used. The slaughter-house was situated in a populous neighbourhood, the houses in the immediate vicinity being occupied chiefly by working people. The killing and other processes were carried on in a confined space, and the adjoining back-to-back houses obtained their only ventilation from the space of which the yard of the appellant's premises formed a part. Upon one visit he saw thirteen live pigs on the premises, and he was decidedly of opinion that there was not sufficient room for such a number. A boiler was placed near a meat-chopping apparatus, and this assisted in contaminating the air and facilitating decomposition. It was his decided opinion that the butchers of the town ought to be forced to use the public abattoirs. The appellant's premises were unsuitable for slaughtering purposes in that there was not sufficient ventilation in the yard to carry away the effluvia which were bound to arise in the course of killing and the other trades carried on. He did not consider it advisable to keep so many as 13 pigs in so confined a space, nor did he think that the space was sufficient for the purpose of slaughtering. Even if one pig were killed per week, it would be a nuisance to the houses adjoining, but not so much so, of course, as twenty a week. He thought that to all persons living near the premises there must be some injurious effects to health, and undoubtedly more so to new comers than old residents. He certainly thought that these premises, by reason of their situation, were not suitable for a slaughter-house. He agreed with the model Local Government Board bye-laws, to the effect that both lair and slaughter-house ought to be 100 ft. away from dwelling-houses. It was very unsuitable that slaughtering should be carried on, as in this case, in such close proximity to sausage-making, pie-making, and other trades.

By the Recorder: Supposing these other trades were eliminated and slaughtering alone was carried on with every possible care, in his opinion there would still be something in the premises prejudicial to health.

The Medical Officer of Health for Leeds (Dr. Spottiswoode Cameron) said that he was formerly medical officer of health for Huddersfield for 12 years. He had seen these premises, and in their position considered that there was everything objectionable for the purposes of a slaughter-house. From the manner in which the slaughter-house was constructed, and the position of the surrounding buildings, he was of opinion that people living in the adjoining premises would suffer in health, their vitality would be lowered, and they would become more subject to the attack of zymotic diseases and less capable of surviving an attack.

Joseph Granger, manager of the Bolton Lane Public Abattoirs, said that during an experience of 15 years he had had opportunities of becoming acquainted with the arrangements necessary in a slaughter-house. He had seen the appellant's premises, and in his judgment they were not suitable for a slaughter-house. His experience satisfied him that pigs were more objectionable to slaughter than any other animal.

The Medical Officer of Health for Manchester (Dr. Tatham) also stated that he had seen the appellant's premises. In his opinion, the premises were unsuitable for a slaughter-house with regard to their position, and also structurally the place was unsuitable with respect to its surroundings in its own yard. The slaughter-house was very near a midden, and also to the lairs in which, he was informed, pigs were kept prior to being slaughtered; and it was also very near the sausage-making and other trade processes. It was very undesirable that a large amount of blood should flow into the drain.

Mr. Waugh: You have an objection, I think, to appear against a corporation?—Dr. Tatham: I have a very great objection to hindering a corporation in the execution of their duty.

Have you any objection to appearing against a corporation?—So long as I believe they are doing right, certainly.

The witness, in reply to other questions, said he had seen Mr. Tetley (Messrs. Wade, Bilbrough, Booth & Co.) before. He was brought over to see the premises on Jan. 8. Mr. Tetley saw him last Monday week at Manchester.

Did he ask you to come over to Bradford and inspect some premises there?—Yes.

And to express your opinion upon them?—Yes.

Did you, upon hearing that it was a case in which the Bradford Corporation were concerned, inform him that you objected to appearing against a corporation?—I did.

And you declined to come over and inspect?—I did, and should do so again.

Quite so. You think it your duty to always assist a corporation, and not to hinder them in that which they might call the execution of their duty?—It certainly would be my duty to abstain from hindering a corporation when they were trying to do their duty.

But at that time you had had no previous communication with anyone, had you?—I do not remember having any.

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Then at that time you did not know whether the corporation were performing their duty or were exceeding it; but you declined to be mixed up with the case against them, whether they were performing or exceeding their duty? You had not any information upon the point at that time?—Not at that time.

The Recorder: At that time did you know anything about the facts of the case—when you were first asked?—No, sir.

In answer to other questions put by Mr. Waugh, Dr. Tatham said he understood from Mr. Tetley that the corporation—he presumed after due inquiry from their medical officer of health—had deliberately come to the conclusion that the slaughter-house in question was unfit for the purpose, and he would have regarded it not only as grossly unprofessional on his part, but as a most improper act, if he had meddled with the case of the Bradford Corporation or their medical officer of health. He did not remember the words which Mr. Tetley used, but he gathered from him that his wish was that he (Dr. Tatham) should come to Bradford, and first of all examine the premises, and then give evidence against the corporation.

In reply to some observations made by the Recorder, the witness said that if he had been compelled to give evidence of the same kind on the other side he would have given it.

Evidence with respect to the slaughter-house being a nuisance was then given by David Smith, butcher, of 266, Manchester Road, his wife, and Mr. and Mrs. Cole, of 268, Manchester Road.

Mr. Waugh asked for the production of the regulations or bye-laws of the corporation as to the public abattoirs.—These not being produced, Mr. Waugh asked if he was to understand that the corporation had passed no such regulations or bye-laws.

The Recorder asked whether the public abattoirs were in the occupation of the corporation—whether they had some officer or servant in charge of the premises.

Mr. Waugh said he understood that the corporation employed a manager, but that the public, on payment of a certain toll, were admitted to the abattoirs to slaughter cattle.

The Recorder said this fact might do away with the necessity of any regulations, because the people who used the place were no doubt subject to the control of this officer of the corporation.

Mr. Waugh submitted that the manager could not control the users of the abattoirs unless there were bye-laws for that purpose. There were, he was told, some regulations in regard to young calves and sucking pigs, and then there were certain levies or tolls made at a certain rate per head of cattle. There must be some regulations in this connection.

Mr. Mellor said he did not know whether there were any such regulations, but they could ascertain this from the manager of the abattoir.

Mr. Waugh said that a copy of these regulations had been specifically asked for.

The Recorder said that no doubt the corporation would produce them as soon as they could.

Mr. Waugh, on behalf of the case for the appellant, commenced by giving the history of his premises from 1855 down to the present time. In 1855 Mr. Schussler had premises in the same locality, which premises were duly registered in accordance with the provisions of the Public Health Act of 1848 as applied to slaughter-houses. The provisions of the Towns' Improvement Clauses Act of 1847, which required either a licence to erect premises for a slaughter-house or a licence for the "user" of premises for that purpose, were not adopted by the Bradford Corporation. Therefore down to the year 1858, when the Local Government Act was passed, there was no necessity for anyone to obtain a licence from the Corporation for the "user" of premises as a slaughter-house. On September 1, 1858, the Local Government Act was passed, sects. 5 and 45 of which, incorporating the Towns' Clauses Act of 1847, provided that no place should be used as a slaughter-house or knacker's yard which was not in use at the time of the passing of the special Act and had been so continued ever since, unless and until a licence for the erection thereof or for the use and occupation thereof as a slaughter-house or knacker's yard had been obtained from the local authority. Mr. Waugh here remarked that there were two licences contemplated by the section of the Act. First of all a person might obtain a licence to build the premises for the purposes of a slaughter-house from a corporation or local sanitary authority, and then the Act of Parliament stepped in and gave that person the right to use the premises for such a purpose until that right was taken away by some authority as high as the Act of Parliament. The other form of licence was a personal licence to an individual applying to the local authority. The individual in such a case would apply for the right to use as a slaughter-house premises already in existence which had not before been used as a slaughter-house.

The Recorder understood Mr. Waugh to contend that the premises being licensed for erection, no licence was required for the use and occupation thereof as a slaughter-house.

Mr. Waugh said that was so, and it was evidently the view that the corporation had taken, for although the appellant had continued to be on the register right down to the present time, no licence to use was ever granted by the corporation for the premises in question. The appellant never applied for a licence, and never received a licence from the Bradford Corporation to use the premises as a slaughter-house. This had been admitted by Mr. Rawson, the Deputy Town Clerk, and clearly this was the interpretation which the corporation themselves had put upon the sub-section which had been referred to. He continued to say that in the year 1860 plans of a proposed new slaughter-house were submitted to the corporation by the appellant, and these plans were approved and adopted by a resolution of the Building Committee, and which was confirmed by the full Council. Accordingly, the appellant erected the premises, and as the Act of 1858 rendered it unnecessary for him to obtain any further licence to use the premises as a slaughter-house, he commenced to use them for such purpose. Mr. Waugh submitted that unless his contention were adopted, the corporation had been winking from first to last at an offence which was being committed by the appellant, for the premises had undoubtedly been inspected from time to time by corporation inspectors, and reports had been made periodically by the medical officer. Dealing with the provisions of the Bradford Waterworks and Improvement Act, 1868, he contended that clearly the first sub-section of sect. 31 contemplated a licence to be granted to an individual for the use of premises which were not in existence as a slaughter-house at the time of the passing of the Act. It was simply a permissive provision, and there was no penalty provided in the Act respecting a person who did not obtain a licence. The only penalty was in regard to a person who used the premises as a slaughter-house after the licence had been revoked. Referring to the sub-section (2) which empowers the corporation to revoke licences, Mr. Waugh submitted that the licences which were there contemplated were such as were referred to in sub-section 1—viz. a licence for the use of a place granted to a person. The appellant never had a licence from the corporation for the use of these premises, but simply a licence for the erection, and through this licence the premises were duly licensed for use according to the Act of 1858 at the time of the passing of the Act of 1868. A further contention on behalf of the appellant was that the revocation of his licence was an exercise on the part of the corporation of a judicial power, and it had been held in higher courts that the performance of a judicial Act could only be carried out after hearing evidence. The corporation, Mr. Waugh said, who were to decide this matter, were the judges in their own cause; they were the persons who were to be benefited by the revocation of this licence—the appel-

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lant was the person who was to be injured by it. He was to be forced, if he wished to carry on his business, to go to the public slaughter-house and pay the tolls and charges there imposed. The corporation had an interest in the matter, and therefore, Mr. Waugh urged, a discretion of this kind ought to be exercised all the more carefully, and only after the fullest opportunity had been given to the person affected to come before them and urge anything that could possibly be urged to prevent the corporation taking the course they intended to pursue. Such an opportunity was never given to the appellant at all. The Act, he submitted, contemplated an inquiry on the part of the corporation before they could revoke a licence, and it would be contrary to every principle of justice to say they might hold such an inquiry without giving the appellant an opportunity to be heard. A number of cases were then cited in support of this argument. As to the facts, Mr. Waugh pointed out that since they were erected no material alteration had been made in the premises so as to make them unfit for the purpose of a slaughter-house, and no such suggestion had been made by the corporation. The premises were properly registered, and were visited by an official of the corporation weekly. He submitted, in conclusion, that the respondents had not proved that the slaughter-house, taken *per se*, was not fit for use as a slaughter-house, and that in regard to the revocation of a licence, the Act, he urged, contemplated either the existence of a nuisance or the fact that the premises themselves were improper for the purpose for which the licence was granted. During the past 30 years there had not been a single complaint against Mr. Schussler with respect to these premises, and they had been regularly inspected by corporation officials.

Mr. Mellor, on behalf of the respondents, submitted that either there was an existing licence to use these premises or there was not. If there was an existing licence to use the premises, then under sub-section 2 of sect. 31 of the Act of 1868 the corporation might revoke or suspend such licence, and the person who felt himself aggrieved must be aggrieved by such revocation or suspension of his existing licence. Therefore the licence revoked being a licence to use if it were in existence, the appellant was not aggrieved under the section to which reference had been made. If Mr. Waugh's argument were right, the appellant was not a person aggrieved, and he had been argued out of court by Mr. Waugh. His appeal, therefore, Mr. Mellor submitted, ought to be dismissed. On the other hand, if the licence to use the premises was in existence, then it might become a question for the learned Recorder as to whether the Corporation, in making the order for revocation, had properly exercised that discretion which the Act of Parliament gave to them. Mr. Mellor agreed with Mr. Waugh that a licence to erect implied a licence to use, and therefore there being an existing licence to use the premises as a slaughter-house the corporation had power by the Act to revoke it. With regard to the contention that the corporation had been actuated by self-interest in making the order, Mr. Mellor contended that their powers were not judicial, but ministerial. He should suggest that the act of revocation was a ministerial act, and he proceeded to cite cases in support of his argument.

The Recorder said that in regard to this point it seemed to him that the whole question was as to whether or not this was a judicial power which the Corporation possessed. Supposing it were a judicial power, then it seemed to him that that fact gave both parties a special case.

Mr. Mellor submitted that it had been completely shown on behalf of the respondents that there was an existing licence, and that under the powers vested in them by the Act they had acted rightly in revoking the appellant's licence.

Albert Schussler, son of the appellant, was the first witness called on behalf of the appellant's case. He said he was the occupier of the premises in question, which were owned by his father, who had retired from business, and now resided in Germany. His father had ten children who were all brought up on these premises. With the exception of the erection of the coach-house and the alteration of the "midden," there had been no other alteration in the premises since 1862, when they were erected. His family had all enjoyed very good health. There were about thirty pigs killed on the premises every week during the winter season, and they averaged about twenty during the hot summer months. In winter they killed on two days in each week; but in summer when it was not hot weather they brought the pigs to the lairs at night and killed them early the following morning. They killed every day in the summer time. The pigs were not fed on the premises unless they had come a long distance, and then they only got some bran and water to drink. Immediately the pigs were killed and their carcases dressed they were taken into the shop and there cut up. The boiling of pigs' heads for "brawn" was carried on after the carcases had been all cleared away. When the pigs were "stuck" the blood was caught in a "blood-catcher" which was held by a second man, the animal having previously been knocked insensible to prevent its screaming. The blood was removed from the slaughter-house when the killing was over, and was afterwards used for making "black pudding." They always caught all the blood. The garbage was all transferred to the "midden." After the killing the place was invariably cleansed by being swilled first with hot water and then with cold. He had never received any complaint from anybody resident in the neighbourhood with respect to his slaughter-house. The walls were whitewashed seven times a year, and the lower part washed with a red wash about every fortnight. The "midden" attached to the premises was emptied once a week. He had never received any complaints either from his neighbours or anybody else in regard to his slaughter-house. In cross-examination he denied that during the killing of a pig a considerable quantity of blood escaped. He admitted that the garbage from the slaughtered pigs was thrown on to the "midden." The hair from the pigs was always burned. He admitted that when the "midden" was emptied there was an unpleasant smell, but it was not one-tenth part so bad a smell as that which accompanied the clearing away of nightsoil.

Mr. George Cliffe Gamble, architect, Bradford, said he had prepared a plan of the appellant's premises. He had inspected them, and he was of opinion they were fit for the purposes of a slaughter-house. He had come to this conclusion after carefully examining the St. James's Market slaughter-houses. He thought there was no danger to the adjacent dwellings from the appellant's slaughter-house if properly used; there was far more danger from the conveniences belonging to the dwellings themselves. He had seen the premises in use as a slaughter-house often, and there was no nuisance from the place, in his opinion. The chimney of the boiling-house was of such a height that all the effluvia must be carried away. He had on Friday caused the lowest flag near to the gully in the slaughter-house to be taken up, and he, with three medical gentlemen, had examined it. There were no traces of blood or any other animal matter beneath it.

Mr. Samuel Jackson, architect and surveyor, Bradford, said that in his opinion the premises in question had been properly planned, and were suitable for the purposes of a slaughter-house. There was, in his opinion, quite sufficient ventilation, and the fall of the floor towards the drain, too, was sufficient. He had examined the public slaughter-house, and his opinion was formed after that inspection. Cross-examined, he said there was no doubt that it would be better if the boiling-place and the lairs were farther apart.

Mr. A. B. Hill, M.D., Medical Officer of Health for Sutton Coldfield, and Joint Professor of Forensic Medicine at Queen's College, Birmingham, was next called. He said he had been deputy medical officer of health for Birmingham for fourteen years. His father was medical

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officer for Birmingham. All the slaughter-houses in Birmingham were private. He had examined the appellant's premises, and in his opinion they were suitable for the purposes of a slaughter-house. Supposing the slaughtering of cattle were carried on there properly and in accordance with the bye-laws of the corporation, in his opinion it would not be injurious to the health of people living in the adjacent houses. There was, he thought, sufficient air space about the premises, and he thought that the ventilation was sufficient for the cubic space of the interior. He did not see any reason why practically the manure pit ought not to be used without being a nuisance, even when being emptied. He had carefully looked under the flag mentioned by a previous witness, and he saw no traces whatever of blood. In cross-examination he said that, from a public point of view, he was of opinion that public abattoirs were better than private slaughter-houses. Re-examined, he said that in the present instance the position of the lairs did not render the appellant's premises unsuitable for the purposes of a slaughter-house.

Mr. Septimus Gibbon, M.B., M.R.C.S., &c., Medical Officer of Health for Holborn and Sanitary Officer to the National Hospital, Holborn, said he had visited the premises with Dr. Alfred Hill, the Medical Officer of Health for Birmingham, in conjunction with whom he had prepared a report. He saw no objection to the position of the lairs in relation to the slaughter-house; they would even be better if they were nearer. He had seen the public slaughter-house in Bradford, and had there actually seen five pieces of coagulated blood go down the grate. In his judgment there was ample air space both about the slaughter-house and the lairs to do away with any injurious effects which might arise from the effluvia thrown off either by the lairs, the slaughter-house, or the "midden."

Dr. Hime, Bradford, said he had examined the appellant's premises, which were in a very cleanly condition, and, in his opinion, quite suitable for the purposes of a slaughter-house. The ventilation, in his opinion, was abundant, and there was sufficient air space around the building to deodorise any effluvium which might arise from the slaughter-house. If the business were carried on with ordinary care there was, in his opinion, nothing whatever to render the premises unsuitable for the purpose for which they were used. Having regard to the surrounding property, he thought the "midden" on the appellant's premises was quite a proper one.—Cross-examined: He thought it was highly improbable that any deleterious results would accrue to the health of the people residing in the adjoining houses from the existence of the "midden." While Medical Officer for the Borough of Bradford he never inspected Schussler's slaughter-house, and, in fact, never knew of its existence.

Mr. George Goldie, physician and surgeon, said he had been Medical Officer of Health of the Borough of Leeds for twenty-nine years up to July 29 last. He had had much experience in Leeds in the inspection of private slaughter-houses. He had on four different occasions inspected the appellant's premises, and was of opinion that they were quite suitable for the purposes of a slaughter-house. Generally speaking, his evidence agreed with that of the previous medical witnesses. He had very rarely seen a more cleanly slaughter-house than that of the appellant.

Ten witnesses resident in the immediate vicinity of the appellant's slaughter-house were called, and stated that they had experienced no annoyance or inconvenience from the premises occupied by the appellant.

The Recorder said the case was an important one. On the one hand it was important that the public health of the borough should be regarded, and on the other hand it was of importance that due protection should be given to those engaged in the lawful industries of the borough. The Act of 1868 gave to the corporation an absolute discretion as to the granting of new licences for buildings; they might grant them for limited periods of not less than one year, and if they at any time thought fit it was within their discretion, without giving any opinion, to refuse to renew such licences. With reference, however, to licences existing before the passing of the Act, different provisions were in force. The Legislature seemed to have thought it right to grant protection of some kind to those persons who had already been engaged in carrying on the business of a slaughter-house, and had provided that their trade should not be interfered with except for certain specified reasons. It was provided that the corporation might revoke or suspend any present licence for any slaughter-house when, in their judgment, the same was a nuisance, or was not suitable for a slaughter-house. In this instance the corporation had not found the slaughter-house was a nuisance; they had simply found it was not suitable for a slaughter-house, and one of the first contentions raised by Mr. Mellor was that the corporation had come to a conclusion on this matter, and that, unless they had acted capriciously, their judgment was not to be interfered with. He (the learned Recorder) did not agree with this contention, because he thought that as the same section gave a right of appeal to any person aggrieved by the revocation of his licence it was intended that the whole matter should be opened and considered by the Court of Appeal, and although he felt that a heavy responsibility was cast upon him, yet he thought he could not avoid considering the question, and he should not be dealing satisfactorily with the matter if he merely said he was satisfied, as he was satisfied, that the corporation had acted in the matter with perfect *bonâ fides* and quite conscientiously with the duty imposed upon them. It was not sufficient for him to say this, but he must consider whether, upon the evidence, the licence might have been revoked upon the ground that the slaughter-house was not suitable for the purpose of slaughtering. Mr. Waugh had said that in this case there was no licence to use. It certainly was not clear that an express licence to use was ever granted; there was a licence to erect the slaughter-house, and Mr. Waugh had contended that that was the only licence necessary—that the licence to erect operated instead of a licence to use, and that the licence to erect could not be revoked. He (the learned Recorder) did not agree with this contention. The appellant had a licence for a slaughter-house according to the second sub-section of section 31 of the Act of 1868, and he (the learned Recorder) did not think it necessary for him to inquire what kind of licence it was; it was a licence for a slaughter-house, and, that being so, he thought the Act of 1868 gave the corporation a right to revoke or suspend it on the grounds named in the section. He next came to what he considered a substantial question in the case, and that was whether there was evidence that the slaughter-house in this instance was not suitable for slaughtering purposes. This question involved the further questions as to whether the slaughter-house was structurally adapted for the purpose of slaughtering pigs, whether it possessed all the appliances necessary for properly carrying on such slaughtering, and those processes necessarily connected with it. Dealing *seriatim* with the different objections put forward by the respondents as rendering the premises unsuitable for a slaughter-house, the learned Recorder first said that he did not consider that the close contiguity of the pig-lairs to the slaughter-house rendered it unsuitable, while he did not think that the number of pigs kept in the lairs affected the question of the suitability or unsuitability of the place as a slaughter-house. The point which had made most impression upon him as to the matter of unsuitability was as to whether there was or was not a sufficient supply of air for carrying on the business without danger or annoyance to the public. On this point there was a great conflict of evidence. From a practical point of view he could not, however, come to the conclusion that the slaughter-house had not a sufficient supply of air to carry away the effluvia arising from the slaughtering and other processes carried on upon the premises. He did not consider that the existence of a

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boiling apparatus in the slaughter-house rendered the premises unsuitable, and in regard to the trap of the sewer gully being inside the slaughter-house instead of outside, he was somewhat influenced by the fact that in some other slaughter-houses in the town and in the public slaughter-houses the same defect, if it were a defect, existed. Although the witnesses agreed that it would be better outside, he did not think that the fact of its being inside rendered the premises unsuitable. In regard to the "midden," he had come to the conclusion that it had been so used as to be offensive, and if he were to come to the conclusion that there was no other mode of dealing with the refuse from the slaughter-house than by heaping it up in the "midden" and allowing it to remain there for a week, he should come to the conclusion that the slaughter-house was not suitable in consequence of there not being in connection with it proper appliances for the storage of refuse. Nobody, however, had suggested a better means of storing the refuse. The real complaint was that it was not carried away, and there was nothing in the construction of the premises to prevent or hinder the carrying away of the refuse. Any slaughter-house, however suitable for its purpose and however excellent its appliances, would probably be injurious if the refuse were not properly cleared away, and he observed from the bye-laws of the corporation that proper provision had been made with reference to the carrying away of refuse. He wished to draw a great distinction between the improper use of the premises and the unsuitability of the place itself. As the proper means of managing the slaughter-house seemed to rest in the removal of the refuse, and, as there was nothing in the construction of the premises to prevent its being properly removed, he did not think that the fact that the refuse had not been removed as quickly and rapidly as it might have been was any reason why the slaughter-house should be considered an unsuitable place. He had come to the conclusion therefore, upon the whole of the facts laid before him, that the slaughter-house was not unsuitable for the purposes of a slaughter-house, although he did find, as a fact, that the "midden" had been used in such a way as to give rise to an effluvium which must certainly have been liable to occasion inconvenience to the inhabitants in the neighbourhood. Another point with which he had not thought it necessary to deal was as to whether a judicial duty had been cast upon the corporation, and that accordingly they could not revoke the appellant's licence without hearing his case. This was purely a matter of law. He had come to the conclusion that the order revoking the licence must be set aside, and therefore he did not think fit to give an opinion as to whether the act of the corporation was a judicial act or not. If Mr. Mellor should ask for a case on this point he should be willing to give him every opportunity. His order, however, was to set aside the order revoking the licence, and allow the appeal with costs.

SANITARY ASSOCIATION OF SCOTLAND.

EXAMINATION FOR SANITARY INSPECTOR'S CERTIFICATE.

GLASGOW, JANUARY 14, 1890.

EXAMINERS:—T. G. NASMYTH, M.D., D.Sc.; P CALDWELL SMITH, M.A., M.D., D.P.H.Camb.; P. FYFE, Esq., Sanitary Inspector, Glasgow; Geo. A. D. MACKAY, Esq., Sanitary Inspector, Edinburgh.

Question 1.—What are the chief duties of a sanitary inspector under the Public Health (Scotland) Act, 1867? Give a *résumé* of the principal sections referring to those duties, naming the sections.

Answer.—Sect. 8 empowers the local authority to appoint sanitary inspectors who shall also be inspectors of common lodging-houses. It also authorises the making of bye-laws for regulating their duties subject to the approval of the board of supervision. Sect. 17 authorises the sanitary inspector to demand admission to any premises (which includes lands, buildings, structures of any kind, streams, lakes, drains, ditches, or places open, covered, or enclosed, &c.) where there are reasonable grounds for believing that nuisance exists. By sect. 26 he is authorised to seize and destroy, after order obtained from sheriff or magistrate, unwholesome meat, poultry, fish, flesh, fruit, and vegetables, found in his district. Sect. 30 prohibits offensive works, such as blood boiling, bone boiling, tanning, slaughtering of cattle, &c., soap boiler, skinner, tallow melter, tripe boiler, or other such works injurious to health, without the consent of the local authority. Sections 39 to 43 describe the powers and procedure necessary for providing hospitals, removal of patients, disinfection of houses, &c., and interment of dead bodies. Sect. 44, regulations for houses let in lodgings, enforcement of privy or water-closet accommodation therein, &c. Sections 45, 46, 47, relate to underground or cellar dwellings. Sections 48, 49, 50, provide penalties for exposure of infectious person in any public conveyance, any street, public place, or for letting any house to person suffering from infectious disorder. Sections 59 to 70 comprise instructions as to the method of registration and inspection of common lodging-houses, and the penalties for breach of the regulations there anent. Clauses 71 to 92 relate to drainage and water supply.

Previous to the Public Health (Scotland) Act, 1867, the officer of the local authority under the Nuisance Removal Acts was styled the "Inspector of Nuisances," and the primary object of his appointment was to discover and remove nuisances injurious to health, &c. For this purpose he must periodically inspect every portion of his district, and notify to the authors of the nuisance accordingly, asking that the nuisance be removed or abated, as the case may be, and failing to obtain this should report the case to the local authority for prosecution. He should keep complete records of his work, attend all the meetings of the local authority, and transmit to the board of supervision the statutory reports required by them. The mitigation and suppression of infectious disease in his district is another important part of his duties. This should be carried out by active visitation in cases of epidemic for the purposes of isolating or removing to hospital in certain cases infected patients, the disinfection of apartments, clothing, &c., and the prevention where possible of children out of infected houses from attending school, &c.

Question 2.—Define what constitutes a nuisance within the meaning of the Public Health (Scotland) Act.

Answer.—The definition is given in sect. 16, as follows:—(*a.*) Any insufficiency of size, defect of structure, defect of ventilation, want of repair or proper drainage, or suitable water-closet or privy accommodation, or cesspool, and any other matter or circumstance rendering any inhabited house, building, premises, or part thereof, injurious to the health of the inmates, or unfit for human habitation or use. (*b.*) Any pool, watercourse, ditch, gutter, drain, sewer, privy, urinal, cesspool or ashpit, so foul as to be injurious to health, or any well, or other water supply used as a beverage, or in the preparation of human food, the water of which is so tainted with impurities or otherwise unwholesome as to be injurious to the health of persons using it, or calculated to promote or aggravate epidemic disease. (*c.*) Any stable, byre, pig-stye, or other building in which any animal or animals are kept in such a manner as to be injurious to health. (*d.*) Any accumulation or deposit of manure or other offensive matter within fifty yards of any dwelling-house, within the limits of any burgh, or wherever situated, if injurious to health, or any accumulation of police manure within a quarter of a mile of the municipal boundaries of any burgh (excepting the city of Glasgow), or any accumulation of deposits from ashpits or manure from town or village laid nearer than fifty yards to a public or parish road, or dwelling-house. (*e.*) Any work, manufactory, trade, or business injurious to the health of the neighbourhood, or so conducted as to be offensive or injurious to health, or any collection of bones or rags injurious to health. (*f.*) Any house, or part of a house so over-crowded as to be dangerous or injurious to the health of the inmates. (*g.*) Any factory, workshop, or workplace not under the operation of any general Act for the regulation of factories or bakehouses, and not kept in a cleanly state, or not ventilated in such a manner as to render harmless, as far as practicable, any gases, vapours, dust, or other impurities generated in the course of the work carried on therein, and injurious or dangerous to the health of persons employed therein, or any such factory, workshop, or workplace as is so over-crowded, while work is carried on therein, as to be dangerous or injurious to the health of those employed therein. (*h.*) Any fire-place, or furnace which does not as far as practicable consume the smoke arising from the combustible matter used in such fire-place or furnace, and is used within any burgh, for working engines by steam, or in any mill, factory, dyehouse, brewery, bakehouse, or gas work, or in any manufactory or trade process whatsoever. (*i.*) Any chimney (not being the chimney of a private dwelling-house) sending forth smoke so as to be injurious to health. (*j.*) Any churchyard, cemetery, or place of sepulture, so situated or so crowded with bodies, or otherwise so conducted as to be offensive or injurious to health.

Question 3.—Describe your action under the Food and Drugs Act, when you wish to take a sample for analysis, until the same is in the public analyst's hands.

Answer.—When an inspector makes a purchase he should, in order to comply with decisions of judges in Scotland, have a witness to corroborate his actions when the case is brought into court. After paying for the sample, he should inform the seller that it is for analysis by the public analyst, and offer to divide it into three portions, viz.: one for the seller, one for the analyst, and the other for retention by the inspector. If the seller declines this offer the whole portion should be sealed with an

official stamp, and transmitted with an order for analysis direct to the public analyst, who divides into two portions, giving the inspector one. In cases where the sample is divided, the inspector's portion requires to be produced in court when necessary or required. Samples should be all numbered, initialed, dated, and kept under lock and key whilst in the inspector's possession.

Question **4.**—What do you mean by constant and intermittent water supply? What are the disadvantages of each and what the advantages? How would you lessen waste of water in distribution?

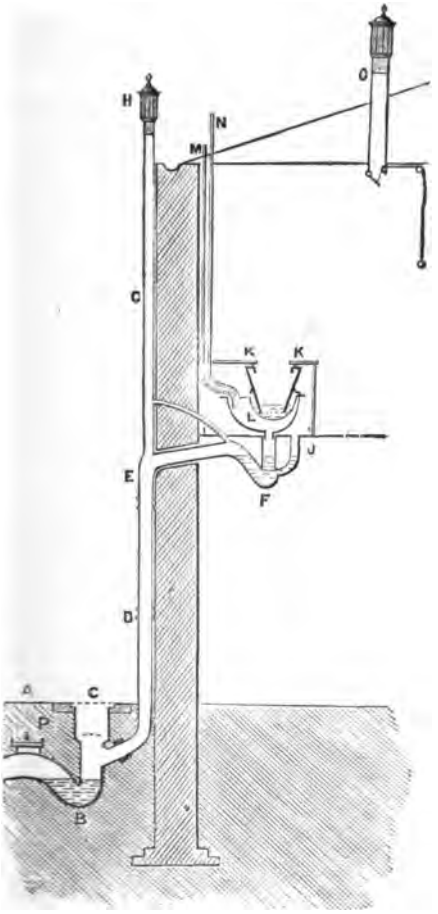
Answer.—A constant supply means a uniform pressure, giving a sufficient supply at all hours of the day or night. An intermittent supply on the other hand is where the householders or others requiring the water can only obtain it at stated hours or for a short period daily, necessitating their storing it in tanks, cisterns, &c.

The only disadvantage arising from a constant supply is that weak or defective pipes, fittings, &c., may cause leakages and waste. The advantages of the constant supply are only too manifest in its being free from pollution by gases generating in the pipes, corrosion of the pipes, and which would occur more or less where the supply is intermittent.

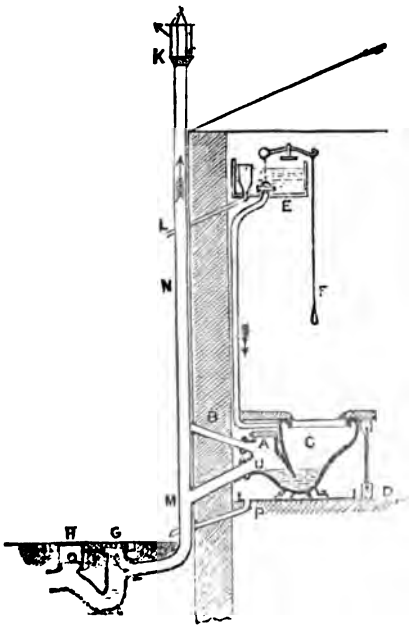
To check waste in the pipes it is necessary to place waste meters on the various sections.

Question **5.**—What are the various forms of water-closets in use? Point out their defects. Describe in full the form of water-closets you would advise for public schools and institutions.

Answer.—There are the cottage, hopper pan, Bramah, valve, and wash-out, but the two common forms of water-closets may be



denominated the pan closets, and the flush-out closets. There are various modifications of these forms. The pan closet is supposed to have always a quantity of water lying in its cavity, but it frequently (it may be said too frequently) gets perforated, retaining a very small amount, if any. Another objection to the pan closet is that the soil (unless where there is a powerful and efficient flush) adheres to the bottom of the pan and inside the basin beneath, causing offensive odours. The flush-out system, on the other hand, acts directly on the soil in the basin, and if

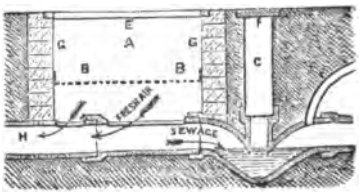


properly constructed should leave not the slightest odour after a flush.

For schools and institutions I would recommend trough closets in strong fireclay, with patent automatic flushing tank (such as Field's) acting on both sides and end of trough.

Question **6.**—What means should be adopted to prevent air from sewers entering into a house? Illustrate your answer by sketches if possible.

Answer.—In order to prevent the gases or air from the drains getting into the houses, an improved ventilating trap of the modern pattern should be inserted a few feet from the outside wall, and provided with a ventilating grating (see sketch). The



soil-pipe should be carried up above the ridge of roof, full bore, and clear of windows. Some sanitary engineers recommend the pipe to be left open at top, whilst others say it should have a ventilating cowl, but this is a matter of secondary importance. All house drains should, if possible, be laid outside the house, and the drains of each house should join the sewer, independent of the drainage of any other adjoining houses or tenements. The sink, bath, and lavatory waste pipes, and rain conductors should be separate from the soil-pipe, and trapped and ventilated independently before being connected to the house drain.

To keep everything safe, the smoke test should be periodically applied for the purpose of revealing any leakages or defects in the workmanship or principle of construction.

Question **7.**—Describe the dry-earth system. What soils are most useful? To what cases is it applicable? How would you deal with the slop waters?

Answer.—Dry-earth closets are fitted with hoppers wrought automatically by the pan receiving a supply of earth, about 1 lb., to mix with the excreta on each occasion it is used, a lever from the seat communicating with the hopper. Dry soils, of a rich mouldy character, are preferable, but wood charcoal and sawdust are frequently used instead. In the case of the latter the manure has not the value of the others for agricultural purposes. The dry-closet system is best suited for country districts, coast towns, and places where an extensive water supply system has not been introduced. The slops should not be mixed with the contents of the dry closets, and must be dealt with like ordinary drainage, according to the circumstances or position of house. If possible it should run through perforated drain tiles on to a garden or field adjoining the house.

Question **8.**—How many cubic feet of breathing space would you allow to each inmate of a dwelling?

A room measures 8 feet 6 inches by 11 feet 4 inches by 9 feet

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3 inches in height. What is the cubic space and how many persons would it be fitted to accommodate?

Answer.—It contains 891 cubic feet 1 in. For dwelling-houses 300 cubic feet is considered the minimum. But there is a general concensus of opinion amongst those qualified to judge that this is too low, and that the minimum should be raised to 400. The room in question would accommodate two adults and one juvenile at the minimum rate.

PARLIAMENTARY PAPERS ON SANITARY SUBJECTS PUBLISHED SINCE JANUARY 15, 1890.

(*To be had of* Messrs. P. S. King & Son, 5, *King Street, Westminster, S.W.*)

"Fever."—Dr. Parsons's Report to the Local Government Board on the recent Prevalence of "Fever" in the Bedlingtonshire Urban Sanitary District, and on the general Sanitary Condition of that District. (No. 50) ..... 6d.

Measles.—Mr. Spear's Report to the Local Government Board upon Epidemic Prevalence of Measles in the Staffordshire Potteries in 1888-89. (No. 49) ..... 1s. 3d.

Navy Health.—Statistical Report for the year 1888. 1s. 10d.

Poor Law Relief.—Index to the Report and Evidence of Lords' Committee of 1888 on Poor Law Relief ..... 1s. 4d.

LOCAL INTELLIGENCE.

The Mayor of Bangor has given £500 towards the Hospital for Infectious Diseases, as a New Year's gift.

The death-rate of Wolverhampton during 1889 was 20·3 per 1,000, and the zymotic rate 2·3, against 3·28, the annual average of the previous ten years.

Salford is to have a new infectious diseases hospital, which is estimated to cost £50,000. The building will include three spacious pavilions, affording accommodation for 144 beds.

South Littleton Water Supply.—The Evesham Rural Sanitary Authority has called in Mr. J. E. Willcox, C.E., of Birmingham, to report as to the best means of obtaining an adequate supply of pure and wholesome water for South Littleton.

APPOINTMENTS.

Medical Officers of Health.

Adams, Matthew Algernon, F.R.C.S.Eng., M., L.S.A., F.C.S., &c., has been re-appointed Medical Officer of Health and Public Vaccinator to the Borough of Maidstone.

Arbuckle, Hugh Wight, M.D.Aberd., L.F.P.S.Glasgow, has been re-appointed Medical Officer of Health to the Thorne Rural Sanitary Authority.

Clarke, Arthur, L.R.C.P.Lond., M.R.C.S.Eng., L.S.A., has been re-appointed Medical Officer of Health to the Street Urban Sanitary Authority.

Dryland, John Winter, M.R.C.S.Eng., L.M., L.S.A., has been re-appointed Medical Officer of Health to the Kettering Urban Sanitary Authority.

Ellis, Hyacinth D'Arcy, M.R.C.S.Eng., L.R.C.P.Edin., has been appointed Medical Officer of Health to the Brierley Hill Urban Sanitary Authority, *vice* G. Ashmead, L.R.C.P., L.R.C.S.Edin., deceased. Salary £30 per annum.

Gibbes, Cuthbert Chapman, M.B.Aberd., C.M., L.R.C.P.Lond., of Surbiton, has been appointed Medical Officer of Health to the Kingston Rural Sanitary Authority, *vice* Dr. Price Jones, deceased.

Gibson, James, M.B.Glas., C.M., has been appointed Medical Officer of Health to the Greetland Urban Sanitary District, *vice* J. V. C. Denning, L.K.Q.C.P., &c., resigned.

Gray, W. G., M.R.C.S.Eng., L.R.C.P.Edin., &c., has been appointed Medical Officer of Health to the Holsworthy Rural Sanitary Authority. Salary, £30 per annum.

Kempe, Arthur, M.D.Brux., M.R.C.P., has been appointed Medical Officer of Health to the Budleigh Salterton Urban Sanitary Authority.

Manley, J. H., M.B., B.C.Cantab., D.P.H., has been appointed Medical Officer of Health to the West Bromwich Urban Sanitary Authority, *vice* John Manley, resigned.

Milne, Thomas, M.A.Aberd., M.D., M.B. and C.M., has been re-appointed Medical Officer of Health to the Borough of Accrington.

Muil, William, M.D.Aberd., M.B. and C.M., has been re-appointed Medical Officer of Health for the Kirkby-Moorside Rural Sanitary Authority.

Osborn, Frank Charles, L.R.C.S.Edin., L.S.A., has been re-appointed Medical Officer of Health to the Urban Sanitary District of Bognor. Salary £52 10s.

Percival, Joseph Mumford, M.R.C.S.Eng., L.S.A., has been appointed Medical Officer of Health to the City of Chichester.

Pratt, John Wyatt, L.R.C.P.Edin., L.M., M.R.C.S.Eng., has been appointed Medical Officer of Health to the Wiveliscombe Urban Sanitary Authority.

Skrimshire, Frederic William, M.R.C.S.Eng., L.S.A., has been re-appointed Medical Officer of Health to the Morpeth Urban Sanitary Authority.

Sykes, William, L.R.C.P.Edin., L.M., M.R.C.S.Eng., has been re-appointed Medical Officer of Health to the Mexborough Urban Sanitary Authority.

Thompson, Wesley H., M.D., has been appointed Medical Officer of Health to the Quarry Bank Local Board, at a salary of £30 per annum, *vice* Dr. Ashmead, deceased.

Turner, Frederick, M.R.C.S.Eng., L.S.A., has been re-appointed Medical Officer of Health to the Buxton Urban Sanitary District.

Wellburn, Edgar, L.R.C.P.Edin., L.R.C.S.Edin., has been appointed Medical Officer of Health to the Sowerby Bridge Local Board of Health, *vice* Dr. J. S. Horsfall. Salary £30 per annum.

Poor-Law Medical Officers.

Barrett, Joseph William, M.R.C.S.Eng., L.S.A., has been re-appointed Medical Officer to the Workhouse King's Lynn for three years.

Barton, George H., M.R.C.S.Eng., L.R.C.P.Edin., has been appointed Medical Officer to the 7th District of the Lincoln Union. Salary £15 per annum.

Bostock, A. S., M.R.C.S.Eng., L.S.A., has been appointed Medical Officer to the Westhampnett Workhouse.

Bowhay, Albert Gunnislake, L.R.C.P.Lond., M.R.C.S.Eng., L.S.A., has been appointed Medical Officer to the Calstock District of the Tavistock Union.

Cockey, Edmund Percival, M.R.C.S.Eng., M.B.Lond., M.D., has been appointed Medical Officer to the 8th District of the Chelmsford Union.

Connor, William G., L.K.Q.C.P.Irel., L.M., L.R.C.S.Irel., has been appointed Medical Officer for the Bedfield District of the Hoxne Union.

Crook, Arthur, L.R.C.P.Lond., M.R.C.S.Eng., has been appointed Medical Officer for the 4th District of the Norwich Union, *vice* David S. Penrice, M.R.C.S.Eng., L.S.A., resigned.

Earle, Walter George, M.R.C.S.Eng., L.S.A. Prelim. Sci. (M.B.) Lond., has been appointed Medical Officer for the East District of the Bingham Union, *vice* H. G. H. Monk, M.R.C.S., L.S.A., resigned.

Edwards, Frank, L.R.C.P.Edin., & L.M., L.F.P.S.Glasgow, & L.M., L.S.A., has been appointed Medical Officer for the Dux ord District of the Linton Union, *vice* Frederic Prince, M.R.C.S., L.S.A., resigned.

Fowler, Thomas Webb, L.R.C.P.Lond., M.R.C.S.Eng., L.S.A., has been re-appointed Medical Officer to the 1st District of the Coventry Union.

Fox, Herbert, F.R.C.S., L.R.C.P., has been appointed Medical Officer to the Stainland District of the Stainland-with-Old Lindley Union.

Gabe, John Rees, M.R.C.S.Eng., L.S.A., has been re-appointed Medical Officer and Public Vaccinator to the 3rd District of the Holborn Union.

George, R. Julyan, M.B., C.M.Edin., has been appointed Medical Officer and Public Vaccinator for the No. 1 District of the Bodmin Union, *vice* C. Williams, L.R.C.P. & S.Edin., L.S.A., resigned.

Gravely, Harry, M.R.C.S.Eng., L.S.A., has been appointed Medical Officer for No. 1 District of the Steyning Union.

Gray, W. G., M.R.C.S.Eng., L.R.C.P.Edin., &c., has been appointed Medical Officer and Public Vaccinator to No. 4 and 5 Districts of the Holsworthy Union, at a salary of £28 3s. and £25 15s. per annum respectively.

Griffith, Alfred Leete, M.D., &c., has been appointed Medical Officer and Public Vaccinator to the Kensal Town District, Chelsea Parish. Salary £120 and fees.

Hillyer, W. Henry, M.R.C.S., L.R.C.P., has been appointed Medical Officer of No. 6 District of the St. Neot's Union.

Holmes, F. D., L.R.C.P.Edin., F.R.C.S.Edin., L.F.P.S.Glas., has been appointed Deputy Medical Officer to the Duffield District of the Belper Union for a period of six months.

Horsfall, Thomas, M.R.C.S.Eng., L.S.A., has been appointed Medical Officer to the Bedale District of the Leyburn Union.

Humphrey, Charles Beyer, L.R.C.P., L.R.C.S. and L.M.Edin., &c., has been appointed Medical Officer to the 7th (Horsmonden) District of the Tonbridge Union.

Ironside, James, M.B.Aberd., and C.M., has been re-appointed Parochial Medical Officer and Public Vaccinator Laurencekirk, Kincardineshire.

Johnstone, John McC., M.B., C.M.Glasgow, has been appointed Assistant Medical Officer to the Govan Poorhouse and Asylum, *vice* W. G. Pretsell, M.B., resigned.

Laird, Thomas, M.B., M.S.Glas., has been appointed Medical Officer for the Soothill Upper District of the Dewsbury Union.

Lang, G., M.R.C.S.Eng., has been appointed Assistant Medical Superintendent of St. Pancras Infirmary.

Logan, Thomas, M.D.Aberd., L.F.P.G.Glas., has been appointed Medical Officer and Public Vaccinator for No. 2 District, North Brierley Union, *vice* H. A. Warburton, M.R.C.S.Eng., L.S.A., resigned.

Maclennan, William, M.B., C.M., has been appointed Public Vaccinator at the Glasgow Western Infirmary, *vice* D. C. McVail, M.D., retired.

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MANNING, Frank B., L.K.Q.C.P.Irel., L.R.C.S.I., has been appointed Medical Officer and Public Vaccinator to No. 9 District of the Barnstaple Union. Salary £90 and extras.

MATHESON, F., M.B.Edin., has been appointed Medical Officer to the Eastern District of the Westminster Union. Salary £100 per annum.

MELLER, C. Booth, L.R.C.P., M.R.C.S., L.S.A., has been appointed Medical Officer to the Bonvilstone District of the Cardiff Union. Salary £45 per annum.

MILBURN, F. Le Fevre, M.R.C.S., L.S.A., has been re-appointed Medical Officer to the 4th District of the Holborn Union.

MITCHELL, Charles Joseph Carter, M.B.Brux., M.R.C.S., L.S.A., has been appointed Medical Officer for Districts 5 and 6 of the Parish of Birmingham, at a salary of £400 per annum, *vice* J. E. Kaye.

MOGG, J. H., L.R.C.P., L.R.C.S.Edin., &c., has been appointed Medical Officer and Public Vaccinator to the Feckenham District of the Alcester Union, *vice* John Robert Nunn, M.R.C.S.Eng., L.S.A.

MUIL, William, M.D., M.B., C.M.Aberd., has been appointed Medical Officer, and Medical Officer to the Workhouse, Kirkby Moorside, *vice* Arthur Wood, L.S.A. Salary £51 per annum.

NEWMAN, Horace Townsend, A.B., M.B., M.D.Dub., L.R.C.S., &c., has been appointed Medical Officer and Public Vaccinator to the Audlem District of the Nantwich Union.

OATES, John Harrison, M.R.C.S.Eng., L.R.C.P.Edin., has been appointed Medical Officer to the 10th District of the Dewsbury Union. Salary £15 per annum and extras.

PEGLER, D. V., M.D., &c., has been appointed Medical Officer to the Shirland District of the Chesterfield Union, at a salary of £17 per annum.

RAVERTY, James, L.R.C.S.Edin., has been appointed Medical Officer to the Bray and Rathmichael Dispensary of the Rathdown Union.

REVELL, George T., M.R.C.S.Eng., L.R.C.P.Edin., has been appointed Medical Officer to the Buckland Monachorum District of the Tavistock Union.

RISDON, G. Owen, L.R.C.P.Lond., M.R.C.S.Eng., L.S.A., has been appointed Medical Officer and Public Vaccinator for the 2nd District of the Wells Union.

ROBINSON, J. H., M.B., C.M., F.F.P.S.Glas., has been appointed Medical Officer to the Wendorn Sub-District of the Helston Union.

ROBINSON, Thomas H., M.B.Edin., C.M., has been appointed Medical Officer for the Wendron Sub-District of Helston Union.

SAUNDERS, Alfred M., M.A., M.B., C.M., D.P.H., has been appointed Medical Officer to the Parochial Board of Birsay and Harray, at a salary of £18 16s., exclusive of medicine.

SEQUEIRA, Henry James, M.R.C.S.Eng., L.S.A., has been appointed Medical Officer for No. 3 District of the City of London Union.

SMART, A., L.R.C.P.Edin., M.R.C.S., has been appointed Medical Officer for the 6th District of the Maidstone Union.

SOUTHEY, Albert James, M.R.C.S.Eng., L.S.A., has been re-appointed Medical Officer to the Colnbrook District of the Eton Union.

STEEB, Adam William Thorburn, M.R.C.S.Eng., M.R.C.P., L.S.A., has been appointed Medical Officer to the Penzance Union Workhouse, Madron, salary £35 per annum; and Medical Officer and Public Vaccinator to No. 1 District of the Penzance Union, salary £15 per annum and extra operation fees.

STEVENS, Percy Richard, L.R.C.P.Lond., M.R.C.S.Eng., has been appointed Medical Officer to the Benenden District of the Cranbrook Union. Salary £43 per annum.

TAYLOR, L. A., M.R.C.S.Eng., L.R.C.P.Edin., D.P.H.Lond., has been appointed Medical Officer and Public Vaccinator for the Kingswinford No. 4 & 2 Districts of the Stourbridge Union, *vice* G. Ashmead, M.R.C.P., L.R.C.S.Edin., deceased, at a salary of £50 per annum and fees.

TURNER, F. H., M.R.C.S., L.S.A., has been appointed Medical Officer for the Capel District of the Samford Union.

VERNON, William, L.R.C.P.Edin., M.R.C.S.Eng., has been appointed Medical Officer for the Saxstead District of the Hoxne Union.

WATSON, W. I., M.B.Lond., M.R.C.S.Eng., has been appointed temporary Medical Officer for the Northern District of Brighton Union, *vice* J. H. Ross, M.D.Glasgow, deceased.

WOLVERSON, Thomas, L.R.C.P.Edin., M.R.C.S.Eng., has been appointed Medical Officer for No. 2 District of the Wolverhampton Union.

WRIGHT, Rowland Hill, M.D., M.S.Edin., has been appointed Medical Officer for the No. 4 (Cheswardine) District of the Drayton Union. Salary £21 and the usual fees.

INSPECTORS OF NUISANCES.

AMOS, J. Amos, has been appointed Inspector of Nuisances to the Erith Urban Sanitary District of the Dartford Union, *vice* W. Egerton.

BARNACLE, James, re-appointed Sanitary Inspector to the Grantham Urban Sanitary Authority.

BOYCE, William, Cert.Mem.San.Inst., Inspector of the Strand Board of Works, has been appointed Inspector of Nuisances to the Poplar Board of Works, at a salary of £130 per annum, increasing £5 per year to £185.

BUXTON, John, has been appointed Inspector of Nuisances, Surveyor, Inspector of Buildings and Common Lodging Houses, Superintendent of the Fire Brigade, &c., to the Malton Urban Sanitary Authority. Salary £90 per annum.

CROGHAN, T. A., has been appointed Sanitary Inspector of the Buxton Local Board.

DEARDEN, Henry, re-appointed Sanitary Inspector to the Ripon Urban Sanitary District.

FOAD, C., has been appointed Assistant Sanitary Inspector to the Poplar Board of Works, at a salary of 36s. per week.

FYLES, John, of Liverpool, has been appointed Assistant Sanitary Inspector to the Smethwick Local Board, at an annual salary of £75.

GILLIA, William Thomas, has been appointed Inspector of Nuisances to the Neale Rural Sanitary Authority, at a salary of £1 10s. per week.

HINDLE, John, has been appointed Inspector of Nuisances to the Thurstonland Urban Sanitary Authority, Huddersfield Union, *vice* Mr. Moss, resigned.

HUMPHRIES, Thomas, has been re-appointed Sanitary Inspector to the Mexborough Local Board.

IMPEY, H., has been re-appointed Inspector of Nuisances to the Luton Town Council.

JOLLY, James, has been appointed Inspector of Nuisances, &c., to the Fylde Rural Sanitary Authority. Salary £80 per annum.

LINDLEY, Joseph, has been appointed Inspector of Nuisances for the Borough of Batley, Yorks. Salary £120 per annum, *vice* A. Colbeck, resigned.

LOWES, Thomas, has been appointed Inspector of Nuisances, &c., to the Morpeth Sanitary Authority, at a salary of £55 per annum.

MINERS, Richard E., Registered Master Plumber of the Plumbers' Company, has been appointed Inspector of Nuisances to the Poplar Board of Works, at a salary of £130 per annum, increasing £5 per year to £185.

MOODY, H. F., late Inspector of Nuisances for Clee-with-Weelsby, has been appointed Assistant Inspector of Nuisances for the Borough of Grimsby, at a salary of £78 per annum.

PEARSON, John, has been appointed Sanitary and Building Inspector to the Corporation of Folkestone, at a salary of £150 a year, out of 126 applications.

THOROLD, S. E., C.E., has been re-appointed Inspector of Nuisances to the Redditch Local Board for the ensuing year.

WATT, William, Commissioner, has been appointed Sanitary Inspector for one year to the Parish of Laurencekirk, with no salary.

YEO, William, Sanitary Inspector, Brighton, has been appointed Inspector of Nuisances to the Vestry of St. Marylebone Parish, at a salary of £2 5s. per week.

SURVEYORS.

ALLEN, Fox Charles J., has been appointed Assistant Surveyor to the Smethwick Local Board, at a salary of £75 per annum.

FROUD, J. Maynard, of Bishopsworth, has been appointed Sanitary Surveyor for the Parish of Bedminster, *vice* Mr. Mark Pady.

LAW, E., has been re-appointed Surveyor to the Northamptonshire County Council.

MIDDLEMAS, T. W., has been re-appointed Borough Surveyor to the Morpeth Sanitary Authority, at a salary of £40 per annum.

POWNALL, F. H., has been re-appointed Surveyor to the Middlesex County Council, at a salary of £300 per annum.

SHELDON, P. J., has been appointed Surveyor of Main Roads to the Essex County Council.

ENGINEERS.

BINNIE, A. R., has been appointed Chief Engineer to the London County Council at a salary of £1,500 a year, *vice* Mr. Dunscombe, resigned.

BOULNOIS, H. Percy, Borough Engineer and Surveyor of Portsmouth, has been appointed City Engineer of Liverpool.

CRIMP, W. S., has been appointed Assistant Engineer to the London County Council at a salary of £600 a year.

CLERKS.

BARNES, Charles B., has been appointed Clerk to the Guardians of the Brackley Union.

BURFIELD, H. B., has been appointed Assistant Clerk in the Guardians' Offices, Brighton.

HENDERSON, E. W., has been appointed Clerk to the Wandsworth and Clapham Board of Guardians at a salary of £250 per annum, *vice* E. H. Taylor, resigned.

KENT, George Charles (Solicitor), has been appointed Town Clerk to the Longton Town Council, at a salary of £200 per annum.

MAUDESLEY, Mr., late Deputy Town Clerk of Swansea, has been appointed Town Clerk of Dewsbury, at a salary of £400 per annum.

MILLER, A. H., has been appointed Deputy Clerk to the Swansea County Council.

MORRISON, G. A., has been appointed Assistant Clerk in the Guardians' Offices, Brighton.

O'CONNOR, E., has been appointed Assistant Clerk in the Offices of the Brighton Guardians.

TALBOT, William M., late Deputy Town Clerk of Manchester, has been appointed Town Clerk, *vice* Sir J. Heron, Kt., deceased.

WALKER, G. E., has been appointed Clerk to the Woodbridge Guardians, *vice* J. C. Fisk, deceased.

WHITTLE, J. Lyon, has been appointed Town Clerk to the Warrington Town Council, at a salary of £500 per annum.

RESIGNATIONS.

ASH, Linnington, L.R.C.P.Edin., M.R.C.S.Eng., Medical Officer of Holsworthy Rural Sanitary District, and Medical Officer and Public Vaccinator of Nos. 4 and 5 Districts of the Union.

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BLACKETT, Dr. Cuthbert, of Durham, who has filled the post of Medical Officer of Health to the Rural Sanitary Authority of that District for several years past, has resigned his appointment.

BROOK, W. H., Town Clerk to the Warrington Town Council.

BUTTERY, Geo. Bosomworth, L.R.C.P.Edin., L.M., L.F.P.S.Glas., Medical Officer for the 1st and 2nd Districts of Birmingham.

DAY, E. J., L.R.C.P., Medical Officer for the Benenden District of Cranbrook.

DUNSCOMBE, Mr., Chief Engineer to the London County Council.

EARLE, L. M., M.D.Edin., C.M., Medical Officer to the Nos. 4 & 6 Districts of the Royston Union.

ELLIS, H. D'Arcy, M.R.C.S.Eng., L.R.C.P.Edin., Medical Officer for the Kingswinford No. 2 District of the Stourbridge Union.

ENGLAND, William, M.D.Edin., F.R.C.S.Eng., Medical Officer of Workhouse, New Winchester Union.

JACQUES, Mr., Surveyor to the St. Martin's Vestry.

KENNARD, Thomas Atherton, M.R.C.S.Eng., L.S.A., Medical Officer for the Highworth District of the Highworth and Swindon Union.

SHELDON, P. J., Borough Surveyor to the Corporation of Burslem.

SMEETH, H. G., M.B.Dub., B.C.L., Assistant Medical Officer to the Salford Infirmary.

SMITHSON, G. W., Inspector of Nuisances and Surveyor to the Malton Local Board.

TAYLOR, Mr., Clerk to the Guardians of Wandsworth and Clapham.

WOOD, Arthur, L.S.A., District Medical Officer and Medical Officer of Workhouse Kirkby Moorside.

VACANCIES.

DISTRICT MEDICAL OFFICER AND PUBLIC VACCINATOR required for the 1st District of the Highworth and Swindon Union. Salary £70 per annum and fees. The Candidate appointed will have to enter upon his duties on March 25. Applications, endorsed "Application for Medical Officer and Public Vaccinator," should be sent in addressed, "Clerk to the Guardians, Swindon," on or before February 22.

RESIDENT MEDICAL ASSISTANT required at the City Hospital for Infectious Diseases, Newcastle-upon-Tyne, for one year, and then subject to re-election. Salary £50 per annum for the first year, and £70 per annum for the second year, with board, lodging, and washing. Applications should be addressed to the Medical Officer of Health, Town Hall, Newcastle, on or before February 28.

SURVEYOR, &c.—The Aberdare Local Board of Health invite applications for the appointment of Surveyor and Waterworks Manager (area 15,127 acres; population 39,000). Salary £250 per annum. An assistant will be provided by the Board. Candidates must be qualified Surveyors, and possess a thorough and practical acquaintance with works of water supply, sewerage, drainage, erection of buildings, road making, paving, and other works in connection with the improvement and management of a large Local Board District, and be competent to take charge and supervision of the entire works of water supply and drainage. Security in the sum of £500 will be required. Age between 30 and 45. Duties of the office will commence on April 1. Applications (endorsed "Application for the office of Surveyor"), stating age, &c., accompanied by testimonials, to be sent to R. Orton Gery, Esq., Clerk, Town Hall, Aberdare, on or before February 20.

SURVEYOR.—Required a Surveyor for the Borough of Burslem, to commence his duties on March 25, and to devote his whole time to them, and to reside in the borough. Salary £200 per annum. Applications, with not more than 3 recent testimonials, endorsed "Surveyor," to be sent to J. T. Powell, Esq., Town Clerk, Burslem, not later than February 19.

SURVEYORS (4).—The Main Roads and Bridges Committee of the East Sussex County Council are about to appoint four District Surveyors of Main Roads for the four Districts into which East Sussex has been divided, each containing about 100 miles of main road. Each District Surveyor will be under the County Surveyor, and will be required to devote his whole time to his duties, and to reside in his district; and will have to give security, and will receive an annual salary of £160. Canvassing for the office will be considered a disqualification. Candidates must be between the ages of 25 and 45 years. Applications for the appointment, marked on the outside "District Surveyor," to be sent in on or before Monday March 3, 1890, addressed to the Clerk of the County Council, County Hall, Lewes, from whom particulars can be obtained on application by letter. F. Merrifield, Clerk of the County Council.

SANITARY INSPECTORS.—The Lambeth Vestry require three duly qualified Inspectors of Nuisances. Salary £120 a year, with uniform provided. Address by letter, marked "Application for office of Inspector," stating age (which must not exceed 40), qualifications (particularly whether holding certificate of Sanitary Institute), with copies of not more than three recent testimonials, to Mr. H. J. Smith, Clerk, Lambeth Vestry Hall, Kennington, S.E., by Wednesday, February 26.

SANITARY INSPECTOR.—The Corporation of Liverpool require a District Sanitary Inspector. Candidates must hold the certificate of the Sanitary Institute. Wages 32s. per week, with uniform. Canvassing will disqualify. Applications, stating age, which must not exceed 35 years, should be endorsed "Sanitary Inspector," and sent to George J. Atkinson, Esq., Town Clerk, Municipal Offices, Liverpool, not later than the 18th instant.

ACCOUNTANT in Town Clerk's Office. Reference essential. Salary £100 per annum. Applications to Town Clerk, Town Hall, Tunbridge Wells.

ENGINEER.—The Municipality of Rangoon requires the services of an Engineer. Salary Rs. 1,000 per mensem, rising to Rs. 1,500, by annual increments of Rs. 100 per mensem. Applications received up to noon of April 7. J. Short, Secretary, Rangoon Municipality.

INSPECTOR OF NUISANCES.—The Vestry of St. Giles's, Camberwell, require an Inspector of Nuisances. Salary, £2 5s. per week, increasing to the maximum of £3. Applications, stating age, &c., accompanied by not more than three recent testimonials, to be sent to Mr. G. W. Marsden, Clerk, Vestry Hall, Camberwell, by February 18.

INSPECTOR OF NUISANCES.—The Town Council of the Borough of Margate invite applications for the appointment of Inspector of Nuisances. Must be a qualified person who has passed the Sanitary Institute examination. Salary £100 per annum. Applications, endorsed "Inspector of Nuisances," to be received by G. Foord-Kelcey, Esq., Town Clerk, 2, Hawley Street, Margate, not later than February 18.

DEATHS.

CLAYTON, Richard, L.R.C.P.Lond., M.R.C.S., L.M.Glas., J.P., Medical Officer to the Accrington District of the Haslingden Union.

DAY, G. N., Town Clerk of St. Ives.

DEVONALD, Alfred, L.R.C.P.Edin., L.M., L.R.C.S., Medical Officer and Public Vaccinator for the Bonvilstone District of the Cardiff Union.

EGERTON, William, Surveyor to the Erith Local Board.

HAWLEY, G. H., Town Clerk of Longton.

JACKSON, Alfred, L.R.C.P.Edin., L.R.C.S.Edin., Medical Officer for the Market Weighton, No. 2. District of the Pocklington Union.

MARLEY, William, Sanitary Inspector to the West Hartlepool Town Council.

RIDING, William, Inspector of Nuisances to the Fylde Rural Sanitary District Fylde Union.

ROBERTS, Carr Holstok, L.R.C.P.Lond., M.R.C.S.Eng., L.S.A., Medical Officer and Public Vaccinator for the Kensal Town District of the Chelsea Union.

SANDWELL, Edward, L.R.C.P.Edin., L.M., M.R.C.S.Eng., Medical Officer for the Eastern District of Westminster.

SHARMAN, Samuel Edward, Inspector of Nuisances to the Sevenoaks Rural Sanitary Authority.

WALKER, Dr. Thomas O., Medical Officer of the Crick District of the Rugby Union.

LOANS.

COUNTY COUNCIL OF LANCASHIRE.—The County Council of the County Palatine of Lancaster are prepared to accept Loans on Bond; Interest at 3 per cent. Apply, Henry Alison, Esq., County Treasurer, Preston.

LEEDS CORPORATION THREE PER CENT. DEBENTURE STOCK.—The Corporation of Leeds are prepared to receive Applications for this Stock at par. For further particulars apply to William Derry, Borough Accountant, Leeds.

COUNTY BOROUGH OF HUDDERSFIELD.—The Corporation are prepared to receive offers of Loans at short notice or for a term of years. All communications to be made to Samuel C. Potts, Borough Accountant, Town Hall, Huddersfield.

BOROUGH OF BURNLEY.—The Corporation are prepared to receive Loans on Mortgage at 3 per cent. for periods of 5, 7, or 10 years. R. E. Fox, Town Clerk.

SHEFFIELD CORPORATION THREE PER CENT. STOCK.—Issue of £371,320.—The Corporation of Sheffield are prepared to receive applications for the above sum of Three Per Cent. Stock at par. Further particulars of W. Fisher Tasker, Registrar, Borough Accountant's Office, Bridge Street, Sheffield.

WEST BROMWICH CORPORATION THREE PER CENT. REDEEMABLE STOCK.—Issue £300,000. Minimum price of issue, £97 per cent.—The Corporation of West Bromwich are prepared to receive Applications for the above Stock. All particulars of Wm. Butterworth, Registrar, Town Hall, West Bromwich.

MALVERN LOCAL BOARD.—This Board invite Tenders for a Loan of £1,300 on security of General District Rates, repayable by equal annual instalments of principal and interest combined in 20 years. Tenders, by February 17, to W. Lambert, Esq., Local Board Office, Malvern.

CONTRACTS.

RICHMOND MAIN DRAINAGE.

THE Richmond Main Drainage Board invite Tenders for the construction, in the Parishes of Richmond and Mortlake, Surrey, of about 5,200 lineal yards of concrete and brick-concrete, and cast-

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iron pipe and concrete and stoneware pipe circular main intercepting sewers, with manholes, ventilators, &c., and maintenance thereof for a period of twelve months after completion.

Specifications, with bill of quantities, schedule of prices, and form of Tender, may be obtained from the Engineer, Mr. J. C. Melliss, C.E., 232, Gresham House, Old Broad Street, London, E.C.

Sealed Tenders, endorsed "Contract for Richmond Main Drainage," must be sent to the Clerk, Mr. J. L. G. Powell, not later than Monday, February 24.

GLASGOW CORPORATION WATERWORKS.

The Glasgow Corporation Waterworks Commissioners invite Tenders for the forming of 5 miles 36 chains of an intended additional aqueduct from Lock Katrine.

Drawings may be seen, and copies of specifications, schedule of quantities, and form of Tender, may be obtained on application to Mr. Gale, Engineer to the Commissioners, at the undermentioned office.

Sealed Tenders, endorsed "Tender for Blane Valley Contract," will be received up to the evening of Saturday, March 1.

J. D. MARWICK, Town Clerk,
Waterworks Offices, City Chambers, 45, John Street, Glasgow.

CITY OF COVENTRY WATERWORKS.

The Corporation of the City of Coventry invite Tenders for the construction of two covered service reservoirs, a cottage, and other works at Coventry.

Drawings may be inspected, and specifications and schedules of quantities and form of Tender may be obtained at the office of the City Surveyor at Coventry, and at the office of Messrs. T. and C. Hawksley, Civil Engineers, 30, Great George Street, Westminster, S.W.

Tenders must be delivered at the office of the Town Clerk, at Coventry, by Monday, February 17.

CONSTRUCTION OF SEWERAGE WORKS.

The Rural Sanitary Authority of the Wirral Union invite Tenders for the construction of sewerage works in the Township of Heswell, Cheshire.

Plans may be seen at the office of the Engineer to the Authority, Mr. C. H. Beloe, M.I.C.E., 13, Harrington Street, Liverpool, where specifications may be obtained.

Tenders (endorsed "Heswell Sewerage") must be delivered to Mr. J. E. S. Ollive, Clerk, 59, Church Street, Birkenhead, by February 18.

MANCHESTER CORPORATION WATERWORKS.

The Waterworks Committee invite Tenders for the completion of the construction of a portion of the aqueduct from Thirlmere to Manchester, near Kendal.

Plans and drawings may be seen, and specifications, quantities, and particulars of the work to be done will be supplied on application to Mr. G. H. Hill, C.E., Albert Chambers, Albert Square, Manchester.

Sealed Tenders, endorsed "Tender for Thirlmere Aqueduct, completion of Contract No. 4," and addressed to the Chairman of the Waterworks Committee, must be forwarded to Mr. T. H. G. Berrey, Waterworks Office, Town Hall, Manchester, by Monday, February 24.

SOMERSETSHIRE DRAINAGE ACT, 1877.

The Lower Brue Drainage Board invite Tenders for the following works:—For constructing three new self-acting clyses with cement concrete walls across the south drain near Cripp's Corner, in the Parish of Huntspill; the north drain in Tealham Moor, in the Parish of Wedmore; and the boundary drain between Tealham and Tadham Moors.

Drawings and specifications may be seen at the Clerk's Office, Bridgwater, or at the Engineer's, Mr. Cyrus Coombes.

Tenders, for each clyse separately, to be sent to the Clerk, Mr. George Lovibond, by Monday, February 24, marked "Tender for Clyses."

SEWERAGE WORKS.

The Epping Rural Sanitary Authority invite Tenders for sewerage works in the Parish of Chingford, Essex.

Plans and specifications may be seen, and bills of quantities obtained, at the office of the Surveyor to the Board, Mr. Edmond Egan, Loughton.

Tenders, under seal and endorsed, to Mr. John Windus, Clerk, at Epping, not later than Thursday, February 20.

CONSTRUCTION OF SEWER.

The Selby Local Board invite Tenders for the execution of about 1,400 yards of main sewer, with manholes, lamp-holes, and flushing apparatus connected therewith.

Drawings and specifications may be seen at the office of the Town Surveyor, Mr. Thomas Mallinson.

Tenders must be sent in by February 20.

CONSTRUCTION OF SEWER.

The Eccleshill (Yorks.) Local Board invite Tenders for the construction of 885 lineal yards of outfall pipe sewer, and other works connected therewith, at Greengates and Apperley Bridge.

Drawings and specifications may be seen, and bills of quantities obtained, on application to Messrs. W. B. Woodhead & Son, Civil Engineers, 18, Exchange, Bradford.

Tenders are to be delivered to Mr. J. Richardson, Clerk, Local Board Offices, Eccleshill, by February 24.

NOTICES OF MEETINGS.

THE SANITARY INSTITUTE,
Parkes Museum, 74A, Margaret Street, W.

LECTURES ON DOMESTIC HYGIENE. SPECIALLY INTENDED FOR LADIES.

A COURSE of Four Lectures on Domestic Hygiene will be given at the Parkes Museum, 74A, Margaret Street, W. (opposite All Saints' Church), by A. T. Schofield, M.D., M.R.C.S., on the following days:—

Feb. 24.—The Training of Children.
Mar. 1.—Flesh and Blood.
" 3.—The Ethics of Life.
" 8.—Nerves in Order and Disorder.

Her Royal Highness the Duchess of Albany, Patroness of the Institute, has graciously expressed her intention of being present at the Lectures, and hopes to present the certificates at the close of the course. An examination will be held after the Lectures, and Certificates granted to successful candidates. The Certificates will be presented at a Special Meeting to be arranged at the close of the Course. Members of the Institute have personal admission to these Lectures.

THE METROPOLITAN PUBLIC GARDENS ASSOCIATION.

A MEETING of Members was held at 83, Lancaster Gate on February 5, the Lord Dorchester in the chair. It was decided to take steps to open the disused burial-grounds of St. James's, Ratcliff, E., and Christ Church, Spitalfields, E.; to oppose encroachments on Wandsworth Common; to urge the London County Council to undertake the maintenance of the Association's gardens; to continue the opposition to the proposed appropriation of the Bethnal Green Poor's Land, the Fulham Lammas Land, and other open spaces.

It was announced that the Islington Vestry had taken over the gardens of Barnsbury Square and Edward Square, N., and that trees had been planted in Romford Road, Barking, E. Several communications from the London County Council, the Charity Commissioners, and other bodies, were read, and a large amount of important business was transacted.

COMPETITIONS.

THE FEEDING OF SCHOOL CHILDREN.

WITH a view to obtaining the best information as to the methods and regulations under which meals are given, either by the State or by voluntary agencies, to necessitous children in large centres of population in Austria, Belgium, France, Germany, Switzerland, and the United States of America, Sir Henry Peek has offered prizes of £60, £40, and £20 for the three best essays giving reliable information on the subject. The essays should be written in either English, French, or German, and forwarded in envelopes marked "Prize Essays," to the Secretary of the London Schools Dinner Association, at the offices of the School Board for London, Victoria Embankment, London, by April 30, 1890. No essay should exceed (about) 30,000 words of ordinary type, exclusive of copies of laws or regulations, which may be attached as appendices. The essays are to become the property of the London Schools Dinner Association, and will be printed at their discretion. The syllabus is as follows:—

1. Are the meals provided for children alone, or for them in common with other classes of population?

2. If for children alone, whether for those attending all classes of schools, for those attending elementary or common schools only, or for poor and necessitous children only; and if for poor only, how investigation as to their circumstances is made, whether by paid officers, by teachers, or by volunteers, and by whom the decision as to whether they are eligible is made?

3. Places at which meals are provided—whether at a centre for several schools, or at the school where children attend, and if at the school, whether in a special dining-room or class-room?

4. Body or authority providing meals—State or central government; municipal or local authority; school managers or board; private charitable persons.

THE *Société Médicale des Hopitaux* has offered a prize of £48 sterling for the best paper on the Artificial Nourishment of Infants. The papers must be sent in before June 1, 1890, to the general secretary of the Society, No. 3, Rue de l'Abbaye, Paris.

ROYAL MILITARY EXHIBITION, 1890.

Under the immediate patronage of Her Majesty the Queen.
To be opened on Wednesday, May 7, 1890, by H.R.H. the Prince of Wales, K.G.

THE following Trade Exhibits will be open to competition:—1. Machines for supplying hot tea, coffee, and cocoa, and mineral waters. (*a*) In camp or on the march. (*b*) In garrison coffee and recreation rooms. 2. Portable tea, coffee, cocoa, and preserved milk. 3. Filters and other methods for the purification of water. 4. Nutritive and portable meat biscuits, soups, vegetables, and forage. 5. Bread making and field ovens. 6. Medical chests and appliances.

Diplomas of merit will be awarded on the recommendation of jurors specially appointed.

Intending exhibitors should apply at once for space to the Hon. Secretary and Director, Major G. E. W. Malet, Gordon House Royal Hospital, Chelsea.

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NOTES AND QUERIES.

Having for some time back been in the receipt of Queries appertaining strictly to sanitary work, and which it would be easy to answer without having to refer our correspondents to competent professional advisers, we have opened a column in which to register such Queries and Replies thereto as can fairly be expected from us; and our subscribers and readers are invited to make such use of this column as will tend to benefit themselves and the community. Both Queries and Replies will, however, be subjected, if unnecessarily long, to strict curtailment.

Irrigation—Ventilation.

1.—In your model answers to questions for surveyors set at the Sanitary Institute examinations, you state respecting sewage treatment that broad irrigation has proved a failure. I should like to know on what authority you state this, and in what towns it has proved a failure, and why?

2.—In the same model answers you state respecting the ventilation of apartments that the outlets for vitiated air should be near the floor level. Please state how and on what authority you arrive at this conclusion, as it is opposed to natural ventilation? The expired air, being warmer and lighter than the ordinary air, has a natural tendency to rise, and if outlets be provided near the *ceiling level*, will pass away if sufficient inlets be provided for fresh air at lower levels. But if the *outlet* be *near the floor*, the vitiated air has to become cool again before it can fall to pass away, and in so falling it must mix up with the pure air of the room to be re-breathed by the occupants to the injury of their health. E. J. H.

[1.—The model answers referred to appear to be those given in August 1886, vol. viii., p. 88, and in December 1888, vol. x., p. 301. They are necessarily brief, and no clear definition of what constitutes "broad irrigation" is given. But it may be gathered from the answers that the term is understood to apply to a system of irrigation under which crude unstrained sewage is applied without intermission to land not specially prepared, by surface formation and drainage, for its disposal. There is a fairly general consensus of opinion that such a system would not be a success, see Sir Robert Rawlinson's *Suggestions*, p. 17; Bailey Denton's *Sewage Disposal*, p. 8; Boulnois's *Handbook for Municipal Engineers*, p. 165; Parke's *Hygiene*, p. 379; Willoughby's *Hygiene*, p. 274. Some advocates of the system might urge that preparation of surface and drainage of land (where such measures are necessary) and also the intermittent application of sewage, are as much essential conditions of "broad irrigation" as of "intermittent downward filtration," the only difference between the two systems being that the former has for its primary object the utmost possible utilization of plant food, the latter, the securing of a pure effluent, crops being a secondary object. If this definition be adopted the question assumes a different aspect.

2.—If only the movements due to unequal density of the incoming and outgoing air had to be considered, it would be quite right to place the inlets at the lowest part of the room to be ventilated, and the outlet at the highest. But under ordinary circumstances it is necessary that the incoming cold air should be admitted above the level of the heads of the occupants of the room, and the current directed towards the ceiling, so as to secure diffusion and prevent sensible draught. These objects are sought to be attained by the Sherringham valve, Tobin's tubes, and many other appliances. Appliances having for their object the admission of air at or near the top of a room are so numerous and so generally approved, that it seems hardly necessary to quote authorities in support of the practice, but Parke's *Hygiene*, pages 169 to 171 may be referred to. None of these appliances may altogether prevent the collection of a stratum of hot impure air at the ceiling, but they all go far towards assisting its diffusion. Openings near the ceiling, fixed to act as outlets, are likely to act at times as inlets, and so fail of their purpose, except it be "Boyle's mica flap valve," which will only pass a current in the right direction. But whatever arrangements may be made for outlets, the principal outlet shaft will be the chimney, and with a good fire burning all other openings, Boyle's valve excepted, will act as inlets. The chimney opening must of necessity be near the floor. The foregoing remarks apply only to natural ventilation as applicable to ordinary dwelling houses with no means of warming other than an open fire. Where large buildings are ventilated by propulsion or extraction of air, and warmed by steam or hot water pipes, or other means, the conditions are different, and the position of inlets and outlets will be arranged to suit the circumstances of each case.—Ed.]

Notification—Fumigation.

1.—As the Record indicates, great numbers of authorities are adopting the Notification Act of last year. Mine (rural) have done the same, and now, by the Public Health Act, whenever an infectious disease is notified, I am bound to go and make all necessary inquiries, &c. This will multiply our work about tenfold; may we not ask for an increase of salary?

2.—I also want especially to ask if the law lays down the duties of a sanitary inspector, the same as a medical officer of health, with regard to his fumigating houses where a case of infectious disease has occurred; or if a medical practitioner notifies, and the medical officer of health inspects and gives directions? The work will be incomplete unless thorough disinfection follows. Is that duty defined by law? M.O.H.

[1.—It seems probable that the new Act will, in many cases, increase the duties of medical officers. Their pay is now generally very small, and they may reasonably ask for an increase of salary. Where the appointment is annual, the time for arranging this would naturally be at the expiration of a year of office; in other cases, Art. 14 of the General Order of the Local Government Board will enable an increase of salary to be granted during the currency of an appointment.

2.—The Public Health Act does not specifically lay down any rules as to disinfection. Sect. 120 imposes on the owner or occupier of a house the duty of cleansing and disinfecting such house, and any articles therein likely to retain infection, on receipt of a notice in writing from the local sanitary authority, requiring him to cleanse and disinfect. It would be impossible to define by law what means of disinfection should be used, as the circumstances of different cases vary so greatly. The notice should, however, always specify what is required; if it does not, it would be impossible to take proceedings to enforce the penalty for failure to comply with it under the latter part of the section. Medical officers are supposed to advise local authorities as to the particular means of disinfection to be required, and if these means are properly set out in the notices, the inspectors of nuisances ought to have no difficulty in seeing that they are used. If they find that the requirements of the notices have not been complied with, it is their duty to report to the local authority, and, in that case, it would probably be necessary for the medical officer to visit the place again.—Ed.]

Books on Sanitation.

Can you acquaint me with the names of authors, publishers, and the prices of books dealing with irrigation, land drainage, sewage and syphons. N. M. W.

[You will find a list of books on the subjects named on pages 118–119 of the Sanitary Record Diary for 1890.—Ed.]

Water from Subterranean Catch Ground.

If a storage reservoir capable of holding ten million of gallons situate in an open and very thinly populated district, at an elevation of 1,000 feet above the level of the sea, is filled in the winter months, and very little water if any runs in during summer, and supposing six out of the ten millions are consumed by the middle of September, what, in your opinion, would be the state of the remaining water at that time (*a*) if the summer had been dry and hot? or (*b*) if the summer had been cold and wet? Aqua.

[If the bottom and sides of the reservoir were free from noxious weeds the water would keep longer. If it were stocked with fish this would also tend to render it more wholesome. But in any case a long continuance of the water with comparatively little movement would be a source of danger. The nature of the surrounding drainage is an important matter. If the summer had been dry and hot there would not be the same amount of, say, field drainage, passing into the reservoir than in a wet and cold one. In either case there is a comparative amount of danger, but greater in the dry and hot season.—Ed.]

Law for Inspectors of Nuisances.

Do you publish in cheap form the Acts or such parts of the Acts of Parliament that are necessary for the proper information of an Inspector of Nuisances. F. T. J.

[You will find all you want in the Sanitary Record Diary for 1890.—Ed.]

Sewer *v.* Drain.

H. J. writes:—"Your reply to Mr. Miller in last month's correspondence is right, but you ought to have pointed out where he is wrong. A person may derive benefit from the making of a sewer, but it has been ruled that benefits cannot be construed to mean "profit" within the meaning of the Act."

[Probably our correspondent alludes to the cases of Acton Board *v.* Batten, and Bonella *v.* Twickenham Board, in both of which it was held that a sewer made by a builder for the accommodation of a house which he was erecting was not a sewer made for his own profit, so as to prevent the sewer vesting in the local authority. If he has any other cases in his mind, we should be glad to be referred to them.—Ed.]

Sanitary Institute Examinations.

Would you kindly inform me which is my best way to proceed in order to prepare myself for passing examination as surveyor at the Sanitary Institute? A. H. B.

[On page 30 of the Sanitary Record Diary for 1890, a list of text-books recommended by the Institute is given. Questions already set, with answers, will be found in back numbers of the Record; they begin in the August number, 1886. Further information may be obtained from the Secretary of the Institute, Mr. E. White Wallis, 74a, Margaret Street, London, W. A member of the Institute has lately made an offer to the Association of Public Sanitary Inspectors, to assist, free of charge, members or associates of that body desirous of passing this examination. Address of Hon. Secretary, Mr. S. C. Legg, Assoc.San.Inst., 117, Powerscroft Road, Lower Clapton, London, E.—Ed.]

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ORIGINAL PAPERS.

INFANTICIDE, BABY-FARMING, AND THE INFANT LIFE PROTECTION ACT, 1872.

By J. BRENDON CURGENVEN, M.R.C.S., &c.

(*Continued from page* 5.)

THE year 1870 witnessed the trial and execution of the baby-farmer, Margaret Waters. It was then four years after I first brought the subject of baby-farming before the Harveian Society and the public. The Home Secretary, Mr. Spencer Walpole, had promised to seriously consider the subject; the President of the Poor Law Board acknowledged the receipt of the memorial of the Social Science Association, adopted after the discussion on my paper on the "Waste of Infant Life" in 1869, without remark; the Earl of Shaftesbury, in 1868, brought the matter before the House of Lords, and the Duke of Marlborough, Lord President of the Council, undertook, on behalf of the Government, to consider what measures could be taken to check the evils of baby-farming. About the same time, Mr. Vanderbyl asked the Home Secretary, Mr. Gathorne Hardy, whether he intended to put the law in motion to suppress the criminal proceedings of the baby-farmers. He answered that the offences charged were crimes within the law, and the attention of the police had been directed to the subject. Nothing was done, by either the Conservative or the Liberal Government, to check the evils at their origin. Infants were found alive and dead in the streets and other places in increased numbers, and women, who should perform the tenderest of all duties, were, through avarice, carrying on the trade of wholesale murder with impunity through the supineness of the Government and the inability of the police to obtain evidence to convict them, although two years had elapsed since the Home Secretary directed their attention to the subject. During 1870 there were found 276 dead infants in the streets of London; there were also many found alive, and were taken to the workhouses, where most of those died. The police, after watching for months certain private lying-in establishments and baby-farms, at last obtained sufficient evidence to convict Margaret Waters of murder. Other women were equally guilty from being connected with Margaret Waters in her system of baby-farming. Mrs. Hall, who supplied her with the infants, was convicted only of fraud in attempting to foist on a gentleman a child as his own that was the legitimate child of a relative of hers. The police obtained evidence of 46 births in her establishment, and that the infants were taken away by Mrs. Hall, or by a woman (Cummings) who came in the evening and took them away under her cloak, after being drugged with laudanum or syrup of poppies. This woman received sentence of five years penal servitude. Another of the gang of baby-farmers, or rather disposers of babies, Mrs. Ellis, the sister of Mrs. Waters, could only be convicted of fraud, for want of evidence.*

Sergeant Relf, who brought these criminals to justice, says: "I took it up" [the subject] "last year, by direction of Captain Baynes . . . in consequence of a considerable number of dead bodies being found in the neighbourhood of Brixton, Peckham, and Battersea; I suspected that those bodies had some connection with a private lying-in establishment. . . . I occupied a furnished room, under an assumed name, and, after a few nights, I saw a young lady leave the house. . . . I traced her to her residence, and further inquiries led me to know that the child had been put out to a woman who advertised. . . . That woman I afterwards found had advertised under 27 different names in one newspaper. . . . I visited her house. She denied that she had any children there at all; but I insisted on going into the house, and on a sofa I saw some old rags lying; I removed the rags, and under them I found seven infants, all in a state of stupor, and apparently dying gradually, through the effect of narcotics."* "I found afterwards that the dietary consisted of a mixture of laudanum, lime, cornflour, water, milk, and washing-powder."† "They all died"‡ "within about three weeks."§ . . . "In about nine instances I traced the clothing on the dead bodies of children found in the streets in the neighbourhood to belong to this individual . . . She received the children for a lump sum, varying from £2 to £20."‖ This was Margaret Waters. Sergeant Relf made further investigations respecting the lying-in establishment of Mrs. Hall, who received £10 to £20 for each confinement, and for finding the child a home. "Mrs. Cummings," says the Sergeant, " . . . stated to me that she used to be sent for, either by letter or telegram, when a birth took place, to go and receive the children, and generally she had £5 with them. Some she used to give to other people at a railway station, and some she dropped about the streets."¶ "She is now undergoing five years penal servitude; she was detected abandoning one child in the public street; there were 15 found alive, one died from exposure, and one was thrown down an area and its skull fractured."** "There is another case where a woman was in the habit of registering a number of deaths of infants, so much so, that the registrar one day made the remark, 'How is it that you register such a number of deaths?' The consequence was that that woman never came to him again."†† "I know a house where there are illegitimate children two or three years of age, healthy and strong; but the reason of that is that they are paid 7s. a week for them, and their object is to keep them alive."‡‡ This prosecution broke up the largest lying-in establishment in South London, and put a stop to one source from whence infants were supplied to baby-farmers for adoption and murder. But it was only one out of many, as Mr. Superintendent Gernon said in his evidence: "There are private lying-in establishments existing to a great number in London."§§ The child is removed, "generally immediately after birth."‖‖ "It is taken away alive for a lump sum."¶¶ The trade and the traffic still went on, but in greater secrecy. I have in my possession a letter of one of these midwives, who was well known to the police, written soon after the execution of Mrs. Waters. It is addressed to a friend, and written on three pages of a circular, printed on pink paper. The wording of the circular is: "PRIVATE LYING-IN. Ladies

* Abstract of Report by Police Sergeant Relf of the case of Mary Hall for Fraud. Report of Select Committee on Protection of Infant Life, pp. 229–34.

* Report and Minutes of Evidence of Select Committee on Protection of Infant Life 1971, answer 791.
† Answer 796.
‡ Answer 798.
§ Answer 799.
‖ Answer 801.
¶ Answer 807.
** Answer 808.
†† Answer 811.
‡‡ Answer 823.
§§ Answer 591.
‖‖ Answer 594.
¶¶ Answer 595.

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Travelling or necessitated to leave Home for their Accouchement will find every accommodation. Baby linen lent or sold. Address, M. E. B., Post Office, 185, Camberwell Road, London, S.E. All letters will meet with an immediate reply." In her letter she asks her friend to come and see her, "at 9, S—— P——, Kennington Park. I will with pleasure get you a nurse child if I can. Since this dreadful baby-farming case the editor will not insert our advertisement. I have had these circulars printed; if you could get them circulated at B. H. and any part out of London, I might get some more ladies, and then you could have the children. . . . Ladies would like to know where to go to be comfortable, and glad of a good home for their child." As soon as the "dreadful baby-farming case" was a little forgotten, she again succeeded in getting her advertisements into the papers, as I have one of hers taken from the *Times* in June 1872, giving the above address, 9, S—— P——, and her correct name.

I relate these facts because those who opposed my views said, after the trial and conviction of these women, it was only a matter of police; the punishment of a few would soon put a stop to baby-farming, and it would be interfering too much with the liberty of the subject to bring all women taking in children to nurse under registration and inspection. These were the views of Mr. Stansfeld, Mr. Jacob Bright, and other politicians of that class. They were not the views of the police themselves, as Mr. Superintendent Gernon, who had the charge of the case of Mrs. Waters, said, in answer to Mr. Jacob Bright, "I think the evil can be checked very much by proper supervision of those places. [He alluded to both the lying-in houses and the baby-farms.] Proper supervision, in my opinion, would check it, because when you bring those things to light you certainly will find that it will be a check upon it, and my experience in other matters teaches me that."*

During the proceedings in the case of Mrs. Waters, and after her conviction, Mr. Ernest Hart addressed four letters to the *Pall Mall Gazette* on the subject of baby-farming.† He says, "baby-farming is widespread and general. It is not confined to great towns, but it chiefly flourishes in them. . . . The average market value of a baby for adoption was £10. At that price there was no difficulty in finding a considerable number of persons who were willing to take a child off its mother's hands, and to include everything." To his advertisement he had upwards of 300 answers. Some were from practiced baby-farmers "who study the most ingenious and easy methods of slowly starving and drugging the children to death. . . . Many of the writers were respectable women who had lost their children," or for other reasons desired to adopt a child to give occupation, solace, and companionship. "Hence," says Mr. Hart, "the demand for such an industry, and any attempt to suppress the corresponding supply must fail. The remedy, then, must be found, not in endeavouring to suppress baby-farming, that is impossible . . . but by regulating and inspecting all houses where children are received for hire to nurse, by registering the persons who take children to nurse, and those who adopt them. Honestly carried out, the mercenary care of children has nothing dishonourable about it; and it is a vocation so necessary . . . that it will be a serious misfortune if it should be degraded and thrown wholly into the hands of unprincipled persons. The more thoroughly the occupation is exposed to observation in the daylight—the more simple, efficient, and general the means of registration and of supervision—the more complete will be the arrest of the present facilities for semi-legalized murder." This is the sound logic of Mr. Ernest Hart; but our legislators are no logicians, so all remedial measures are still left for consideration, trusting that a check has been given to baby-farming by the late trial barely giving ear to those who tell them that at least two-thirds of the 50,000 illigitimate children born yearly in England and Wales must of necessity be placed by their mothers "out to nurse." The *Pall Mall Gazette* of October 13, 1870, under its late editorship, remarks in an article on the subject: "It would be a great mistake to suppose that the execution of a single baby-farmer has frightened the other members of the profession into seeking a livelihood in less murderous ways. On the contrary, it would be no surprise to us to learn that the trade had decidedly profited by the publicity given to it by these proceedings."

The parliamentary session of 1870 closed without a sign of anything being done by the Government in the matter, and from what could be ascertained the next session would be equally barren. The only way then, to obtain an Act for the registration and inspection of baby-farms and nurses, was to find a member who was willing to enter into the subject and bring in a private Bill.

In October 1870 my friend, the Rev. Oscar Thorpe, Vicar of Christ Church, Camberwell, in whose parish several dead bodies of infants had been found, and who had had several interviews with Sergeant Relf on the subject, introduced me to Mr. W. T. Charley, then M.P. for Salford (now Sir W. T. Charley), as a gentleman who would probably enter into the subject with a view to bringing a Bill before the House of Commons. I accordingly had an interview with him and Mr. Thorpe at his chambers and read over my paper on baby-farming and my suggestions for a Bill, explaining the whole subject fully to him. I proposed the formation of a society, the Infant Life Protection Society, for the purpose of bringing public opinion to bear on the work and to strengthen our efforts to get the Bill passed. He assented to this, and agreed to fill the office of chairman and treasurer. Mr. Thorpe and I took the duties of honorary secretaries provisionally until appointed at a public meeting. In the course of a week we obtained the consent of sixteen gentlemen to serve on the Committee, some of whom had taken great interest in the subject such as Mr. Ernest Hart, Dr. Andrew Edgar, LL.D., Mr. George W. Hastings, Mr. W. T. Manning, Mr. H. A. Maude, Mr. Francis Peek, and the Rev. Richard Wood.

On November 1, the first general meeting of the society was held. The society was then constituted, the committee and officers appointed, and the first object of the society clearly defined, viz. "to prevent the destruction of infant life, and the moral and physical injury to young children caused by the present system of baby-farming; and, with this view, to promote a Bill in Parliament requiring that any person taking charge of an infant or young child for gain shall be certified as of good character and be registered; and that every child so placed out shall be subject to proper supervision." The second object formulated was, that, "in the event of the

* Answer 628.

† "The Protection of Infant Life": an inquiry, &c., by Ernest Hart. Reprinted from the *British Medical Journal* and the *Pall Mall Gazette*.

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proposed Bill being passed by Parliament, to promote the formation of district committees, with a view to the selection and supervision of nurses of good character resident in suitable localities." This object with all our good intentions we never carried out, as we failed to obtain the interest or assistance of any ladies in our laudable desire to save infant life and suffering. The third object was "to promote the boarding out of destitute orphans and deserted children in healthy places, and with trustworthy persons, instead of their being left under the injurious moral and physical influences of workhouse nurseries and schools." This was abandoned when we found we could not organize the district committees of ladies. Our fourth object was "to promote the amendment of the laws relating to bastardy, the Registration of Births and Deaths Acts; the law of evidence in cases of infanticide, and the offences against the Person Act as relating to young children." This fourth object of the society was in great measure carried out, and I shall further on allude to this part of our work, as our intention in obtaining amendments of these laws was the protection of infant life.

The committee was composed of gentlemen who had for a considerable period paid attention to the causes that have led to the destruction of infant life, and others, members of the bar, who were well acquainted with the laws bearing on the subject. They prepared a "draft Bill for the better protection of children," which provided for the registration of all persons receiving children to rear by hand apart from their parents, and for the proper and systematic inspection of such children.

On November 9, the committee waited by appointment on the Home Secretary, Mr. Bruce, M.P., and laid the Bill before him. He patiently heard the views of several of the committee, and, in answer, stated "the Bill appeared to have been very carefully drawn; the Government was inquiring into the subject, and if they did not bring in a Bill the society would have a right to expect that they should give ample reasons for not doing so, or for not supporting a Bill brought in by a private member." A few days later a deputation from the committee had an interview with Mr. Goschen, M.P., president of the Poor Law Board. He approved generally of the Bill, but wished all children placed out by boards of guardians to be exempted from its provisions, as he had prepared a minute which he was about to issue to all boards of guardians on the subject of boarding out children, and he gave us a copy. He also suggested that no one in receipt of parochial relief, nor any convicted person, should take in a child to nurse. The Bill was amended in accordance with his desire. In consequence of Mr. Goschen's minute on boarding out destitute children and orphans by the boards of guardians, the third object of our society was relinquished. On December 9, a copy of the amended Bill was sent to the Home Secretary, and he was asked if the Government had decided to bring in a Bill. On December 23, no reply having been received, he was again communicated with, and an answer received stating "that although a measure on this subject is in course of preparation, Mr. Bruce must decline to give any present pledge as to its introduction."

(To be continued.)

THE eighth part of an adventurer's share in the New River Water Company has recently been sold for £13,000.

THE AIRE AND CALDER.*

By J. W. WILLIS-BUND.

IF anyone wants to see the worst form, or one of the worst forms, of river pollution, the West Riding of Yorkshire is the place he should visit. For a long time the Aire and Calder have had an evil reputation. Nearly a quarter of a century ago the Royal Commission on River Pollution reported that into these streams flowed "millions of gallons per day of water poisoned, corrupted, and clogged by refuse from iron and chemical works, dyeing, scouring, and puddling, worsted and woollen stuffs, skin cleaning and tanning, slaughter-house garbage, and the sewage of towns and houses." This was written 23 years ago; 14 years ago an Act was passed for preventing the pollution of rivers; the persons to carry that Act into operation were the various sanitary authorities. That Act made it absolutely illegal to place solid refuse in rivers; and yet 14 years have elapsed, and the last state of these rivers is worse than the first. Nothing has been done, the evil is increasing daily; the authorities sit by with folded hands, and pay no attention to it, yet the ratable value of the district drained by the river is said to be £7,000,000, and the population two million and a half. It cannot be said, as is urged in many cases, that the local authorities are waiting to find some efficient system of sewage disposal. This is no question of sewage; it is a question of direct and deliberate defiance of the law by the various manufacturers who dwell on the banks of the rivers. It seems hardly credible that such a state of things can be possible; that a large class of the Queen's subjects should be allowed to say we will not obey the law, because it will involve us in the expenditure of money; that the authorities whose duty it is to see the law carried out—for, strange as it may seem, there are rural sanitary authorities in these districts—should deliberately abstain from putting the law in motion; that the Local Government Board should stand by, with full knowledge of the facts, and take no steps to awaken the sanitary authorities to their duties; yet such is the case. We are inclined to ask, with Mark Twain, "Is civilization a failure?"

We have always thought that it is a mistake to treat the question of river pollution from the fishery point of view. We recognise to the full the good work that the Fishery Boards have done throughout the country in getting the law carried out to some slight extent, and showing that there is a law; but the fishery interest is small compared with the manufacturing interest, and in a contest between the two the fisheries must go to the wall. If evils like the Aire and Calder, the Irwell, and other grossly polluted rivers are to be dealt with, it must be on the broader basis of national health as opposed to manufacturing interests and manufacturing profits; as compared to public health, manufactures are less important than the fisheries as compared to manufactures. And we think Dr. Wilson would have been well-advised had he made more of the public health and less of the fisheries; not that we would in any way depreciate the aid he has received from the fishery authorities. They seem to have been the only people who gave him any real help in his work.

The actual state of the rivers is well brought out in Dr. Wilson's report, and it is worthy of note that the rivers are so bad that freshes, that in most rivers are regarded as a means of cleaning and scouring,

* Report on the Pollution of the River Aire, presented to the Goole Local Board by J. Mitchell Wilson, M.D., Dip. Public Health.

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in the Aire only make matters worse by bringing down greater quantities of polluted matter. Indeed, the state of the rivers seem absolutely hopeless; during a fresh it is "a gigantic stinking sewer"; at low water it is, if possible, worse, and we are led to ask, is there ever, and, if so, when, a time when the river is comparatively pure?

To give some idea of the state of the river, we take the following figures from Dr. Wilson's analyses of samples of water. The results are in grains per gallon. A sample was taken at Hook Bridge at low water during a fresh. No less than 283·5 grains of dried solids were found in it; only 20 grains were dissolved in the water. It is said that in some places the grease from the dye works is in such quantities that the surface of the river can be made to burn, and a flame to travel some distance on the water. Near its source, in every 10 gallons of the water of the Aire there are 125 grains of solid matter when the water is completely evaporated, of which 5 grains are floating in the water, and can be filtered off; lower down, the 10 gallons contain 475 grains, of which 75 are floating matter. These figures, in other words, show that in every million gallons there is 1,000 lbs. weight of floating offensive matter, and 2 tons of solid matter dissolved in the same quantity of water. So polluted is the river that any natural purification by plants or the atmosphere is impossible, for there are no plants, and the amount of organic matter requiring oxidization is too large to be affected by any natural process.

Turning to the results of this state of things on the health of the district, an offensive effluvia is always present in a greater or lesser degree, and if the wind sets from the river towards a house, the dwellers have a constant feeling of nausea, but no actual vomiting. The smell is sometimes so bad, the house doors and windows have to be closed during warm weather; during summer all the windows of the houses have to be shut at night. In the daytime the windows of a school facing the river, but 100 yards away from it, have to be kept closed. As a rule, cattle will not drink the water; but in a case where a cow did, a definite illness was traceable to a person drinking her milk; and Dr. Wilson states that on one occasion an outbreak of enteric fever was due to the smell arising from the river, and on another, from the same cause, an outbreak of scarlet fever was much more virulent.

These facts speak for themselves; they are made on the authority of the medical officer of health of five of the sanitary authorities within the polluted area. They cannot, therefore, pretend ignorance, and we shall wait with curiosity to see if they take any action on it. One thing we should point out. The great polluter of the Aire is the Corporation of Leeds. They do nothing, because they say the Aire is polluted before it reaches Leeds, and the local authorities below Leeds do nothing, because Leeds is too big to be attacked. But what is the Local Government Board doing? What is the Yorkshire County Council doing? Does it require an outbreak of cholera to force local authorities into action, or is it to be the rule that a large body may defy the law? It is fortunate for the different authorities that a corporation cannot be indicted for manslaughter; for if the first statements in the report are true—and we have no reason to doubt them—it seems that human lives are being sacrificed from neglect of duty, a matter that would in the case of an individual make him run the risk of manslaughter if he allowed his property to remain in the state of the Aire and Calder.

SOME DEFECTS IN THE PUBLIC HEALTH ACT, 1875.

By C. C. SMITH, M.San.Inst., Surveyor and Sanitary Inspector, Skipton.

(*Continued from page* 372.)

Sect. 91—(*cont.*).

A characteristic weakness of this and many other sections in the Act is that no independent legal action can be taken by an inspector without the direct intervention of the local authority. There is nothing to prevent a man out of malice emptying night-soil on a street or in the vicinity of a house, thereby causing a nuisance. But the inspector cannot take legal action, and before the periodic meeting of the board is held, the matter has been removed, when the service of a notice is futile, except when a nuisance exists or is a continuing offence. Nor can the authority take legal action under such circumstances, for if no notice has been served, there is no penalty incurred for disobedience. But the offence may be repeated, and where is the Act and the local authority?

Sect. 92.—"Local authority's duty to cause district to be inspected."

This section needs amendment, and increased onus should be cast upon the inspector direct. Neglect of duty should be punishable by penalties imposable by the Local Government Board or County Council. The officer should, however, not be removable except by one of the aforesaid boards, and his tenure of office should not be for short periods.

There is no doubt the Legislature were perfectly justified in refusing to place too much power in the hands of the early inspectors. Their status and intelligence were against them. But a period of 15 years has witnessed important strides in their position and qualifications. Unfortunately, however, when some authorities are suffered to appoint men—under the misnomer of inspectors—at salaries of from £10 to £40 per annum, and the majority in the whole kingdom under £100, how can the posts be filled by men in whom implicit trust and respect can be placed, and what wonder is there that their progress is even such as it is?

What is needed is the formation of districts of a considerable area, coincident, it might be, with a borough boundary, a petty sessional division, including small urban and rural districts, or a drainage area under one chief inspector, with a number of subordinate inspectors. The former should be a highly qualified, certificated, trained officer, to whom subordinates should deliver daily reports. To the chief inspector should be relegated the power to take summary proceedings against offenders in respect of occupiers' nuisances, or those which require no structural alterations for their abatement, while nuisances requiring structural alterations should be reported to the local authority in whose district the nuisance exists.

It is certainly an error of judgment to expect members of local authorities, who are themselves ratepayers, and often only annually elected representatives of the ratepayers, appointed mostly for the special purpose of keeping down rates, to be able to exercise the functions which the Act imposes on them, without bias and altogether to the general good. The wonder is, not that sanitary administration is inefficient, but that the attempt at all is made in the direction of reducing public mortality when the onus of declaring whether their rates shall be

burdened by the cost of expensive works of water supply, sewerage, &c., is vested in them.

Truly, sections 299 to 302 are supposed to reserve to the Local Government Board the power to compel defaulting authorities to carry out their duties, but these sections are suffered to be recognized more by their breach than their observance.

Sects. 94 and 95.—"Local authority to serve notice requiring abatement of nuisance," and "on non-compliance with notice complaint to be made to justice."

We are not sure whether the ends of justice and sanitary laws can be so efficiently administered as they should be when so much elasticity is left to the local authorities, whose members have to sit in judgment upon themselves, their relations, or friends, who have insanitary property belonging to them, or who are themselves frequently committing some breach of the Acts or Bye-laws. In districts, where some interested builders or property owners form cliques on the board, sanitary progress is retarded, and the sanitary inspector is advised not to be energetic. In rural districts we have an authority, created for the special purpose of administering poor relief, endowed with the administration of sanitary Acts—a duty which, in many instances, it is unable to carry out, partly because these boards are unwieldy from point of numbers and partly because they look upon the Acts as so much *impenetralia*.

The linking together, too, of two such duties as poor relief and sanitary administration is an unintelligible one, and, as at present conducted, is not considered satisfactory.

Sect. 109.—"Provision in case of convictions for over-crowding."

As inspectors have not a continuing right to enter private houses at their will—and we do not think a Legislature should ever give any officer such unreasonable power—yet better means to prevent overcrowding in private houses should be devised. Separation of sexes in sleeping rooms should, on moral grounds, be enforced. But if an inspector were suspicious that over-crowding existed in any house, before a penalty could be sought it would be necessary that he must first gain admittance to the house by night.

The value of sect. 102 in a case like this will be manifest when it is pointed out that before application is made to a magistrate, a written application must have been first sent to the occupier for admission. The result of finding over-crowding after this may be anticipated.

Much annoyance might be saved occupiers, and good would be done, were the registration of all houses enforced and the maximum limit of inmates allowable fixed.

Sect. 116.—"Unsound meat."

Seeing that this section has been found wanting so frequently, it is high time it was amended so as to include all articles intended to be used for the food of man.

The section only permits inspectors to seize meat under certain conditions. They should certainly have clear power to seize diseased meat intended for the food of man while in transit. I have found from experience much needless espionage entailed and successful seizure thwarted through defects in this section. Slink butchers and jobbers in rural districts send diseased carcases out of the country into the large towns, and the rural inspector cannot safely have them seized and condemned, and he has to discover, if possible, the destination of the carcase, and promptly communicate with the chief sanitary inspector of the town or borough, who, I have found, as a result, has had to set apart a staff of 14 inspectors to watch for the entry of the consignment into his district. Yet, even with all this labour, the cordon has been passed through, and I have known the carcase conveyed into the borough inside a hearse!

Sect. 120.—"On certificate of medical officer of health, houses to be cleansed and disinfected."

It should be compulsory on all occupiers to disinfect a house after the recovery or death of every case of disease scheduled in the Infectious Disease Notification Act, 1889, without the certificate of the medical officer of health being requisite. Local authorities cannot at present enforce disinfection without legal proceedings.

Sect. 124.—"Removal of infected persons to hospital."

The value of this section would be enhanced by requiring the removal of patients (when a hospital for infectious diseases exists), when lodged in any house where, in the opinion of the medical officer of health, removal is advisable.

On the other hand, a clause should be inserted requiring local authorities to provide at such hospitals a sufficient staff of trained certificated nurses, and without these no case should be admissible. The parsimony of some authorities has been known to limit the nursing staff to paupers from the union workhouse, and deaths have occurred under such circumstances which might have been avoided.

Sect. 126.—"Penalty on exposure of infected persons or things."

Until some means of quarantining the whole of the inmates of a house where a case of infectious disease exists, the attempts to reduce the spread of infectious diseases are of little value.

It would appear that the Legislature have greater regard for non-infected cattle and swine than for human beings, for immediately an infectious disease breaks out amongst the former, the affected animals are isolated; an infected area is defined and declared by public notice, and no animals are suffered to pass out of this area, under a severe penalty to the owner.

But in the case of human beings, the contagion is suffered to be conveyed in the clothing of all the inmates of the same house into schools, clothing factories, work-rooms, churches, public meetings, and wheresoever they wist without deterrence.

"Interference with the liberty of the subject," it is urged, would be the outcry, but liberty should end where it involves the chance of ruin to a neighbour or danger to a community. Medical officers of health and inspectors feel only too sadly that their visits to infected houses with advice and caution are in the majority of instances almost futile with such pseudo-isolation as at present is enforceable. Quarantine and compensation for temporary loss of employment should go together.

Sect. 150.—"Power to compel paving of private streets."

This section is most loosely compiled, and has given rise to more litigation than probably any other section in the Act. The definition of "street" is nowhere explicit, and it is something of an enigma how a street can be sewered, levelled, paved, metalled, flagged, channelled, and made good, &c., all at the same time. The erratic compilation may be further noticeable from the absence of any reference to kerbing and to the drainage of the street.

It is unfair to an authority that besides undertaking the execution of the work (for which, by the way, no provision is made for claiming commission on the outlay), they have to run the serious risk of

inability to recover costs often through some slight informality. Why should not legal proceedings be the first step, and application be made for an order by the magistrates on the owners to execute the works? All the disputes as to whether a street is a highway; who are the owners responsible, &c., could then be settled. An alternative suggestion might be that an estimate of the probable cost of the execution of paving, &c., should be prepared, and the amount recoverable from each owner, before the works were undertaken.

Sect. 152.—"Power to declare private streets highways."

According to the words of the section, before a street may be adopted as a highway, it should be sewered, levelled, paved, metalled, &c. I find, however, that in some districts the section is evaded by the authorities assuming that "paved crossings" being provided, the Act is complied with, and private streets are taken over as highways with as much alacrity as interested owners and members can influence the authority. It is urged in those districts that as none of their existing highways are paved, it would be inequitable to require owners of private streets to pave from channel to channel before adoption. The adoption of such streets as highways is, however, improper, and might be annulled on appeal, *vide* Attorney-General *v.* Bidder, 47 J. P., 263.

The 2nd clause of the section provides for objection on the part of the proprietors of the street to its adoption, but where by a process of jobbery a board has wrongly adopted a street, the whole body of ratepayers suffer. But how, and to whom, must objection be lodged by them?

Sect. 157.—"Power to make bye-laws."

It is felt by most sanitary officials to have been an egregious blunder that old buildings should have been exempted from any control under the bye-laws. The over-built condition of some portions of towns is notorious, yet any house erected previously to the adoption of bye-laws for streets and buildings may in most cases be enlarged or dealt with in such a fashion as the owner wills. He may, providing he does not rase to the foundation, rebuild the house full of sanitary defects, with improper ventilation, deficient lighting, party walls of any thickness, and cover all available space with buildings which should serve as an uncovered area, and yet escape the provisions of the Act. When we remember that it was the highly insanitary condition of the old streets and buildings which was the primary cause of sanitary legislation, it would appear to be a burlesque that authorities are not given power under the bye-laws to deal with the very buildings which perpetuate these evil conditions.

Sect. 159.—"What to be deemed a new building."

This is defined as "the re-erection of a building pulled down to or below the ground floor." But which is the ground floor, for we have no definition? Does it mean the ground line, or any space between the floor and the ceiling level? Suppose an owner pulled down an old building to the level of the window-sill, and built again without submitting plans, does he evade the Act?

Secs. 189 and 190.—"Appointment of officers of local authorities."

It is urged by inspectors of nuisances, almost as a body, that they ought to be under the control entirely of the Local Government Board or County Council, and not appointed annually and subject to be turned out after offending some members of these bodies. There is certainly no officer of a local authority who has to come more in conflict, if he performs his duties honourably, with its members, and who is more liable to have cliques formed against him than an inspector.

But the Local Government Board, instead of removing some of these impediments, actually perpetuate them, and only just recently a case occurred where local authorities for two years in succession passed resolutions appointing their inspector for three years, and yet the Local Government Board refused to sanction his reappointment for more than one year, the term of the original appointment, as "it was against their present practice to do so"!

The superannuation of officers should find a place in the Statute Book. Provision is made in this manner for the police and numerous other bodies of Crown officials. Are the services of inspectors worthy of less recognition than those of the former?

Both surveyors and inspectors should, it is considered, be now required to possess certificates from some recognized examining body as to their competency to discharge the duties of their office. Of a good inspector it has been said that he must be somewhat of a lawyer, a veterinary surgeon, know something about diseases, understand the construction of buildings, and drains, &c.; and still any farmer or policeman can get a job, as no qualifications are necessary according to the Act. A dentist, however, who looks after your teeth must be qualified, but an inspector who has to try and prevent the spread of infectious diseases, and thus save lives, need not be qualified.

Passing from this we look upon it as a strange anomaly that there should be allowed such a divergence in the laws of adjacent sanitary districts. The Public Health Act, 1875, contemplated uniform laws for all towns, but the permissive character of the Act has produced the contrary result, and in adjacent sanitary districts different sets of bye-laws are the rule, not the exception. It is almost incredible that in a borough contiguous to my district, back to back houses are built with impunity; but in these districts, two urban and one rural in character, and where buildings are not over-crowded, these are not permissible. This is the exact reverse of what ought to be, and if sanitary safeguards are required, surely they should not be relaxed for a crowded borough. To owners and builders in our rural districts, this kind of law-making is looked upon as a travesty, and causes friction in carrying out the bye-laws.

It would be a public gain if the permissive character of the 157th section of the Act were removed and replaced by a Building Act, making the sanitary law imperial instead of local. It is a moot point whether the powers of urban and rural sanitary authorities should not be assimilated in a large number of sections. Of the powers possessed by an urban authority, some are compulsory, and some permissive. The compulsory sections are:—25, 26, 47, 49, 50, 66, 112-115, and 160; while the permissive sections are, 10, 11, 20, 39, 44, 45, 144-159, 161-163, 164, 165, 166-170, 171, and 172.

Now in almost all rural districts there are small towns which equal in population and ratable value many urban districts, yet through the limited powers possessed by the rural authority, the condition of some of these towns is discreditable to any sanitary authority, yet through no fault of their own Take, for example, the matter of private streets,

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After their first construction a rural authority. although possessed of building bye-laws, have no jurisdiction whatever over them in whatever defective condition they may have fallen. And the same complaint may be made of other exceptional privileges meted out to urban authorities.

But, it may be urged, rural authorities may obtain urban powers with the consent of the Local Government Board. This, however, is only half a truth, for the Local Government Board are reluctant, as a rule, on this matter of extending urban powers to rural authorities. As an instance, the rural authority for this district recently applied for urban powers to control new streets and buildings, and slaughter-houses for the whole of their townships, comprising 47 in number. This was a requirement which had been long needed. But the Local Government Board, out of the abundance of their wisdom, refused the application, as it was against their present practice to allow the application of bye-laws on these matters for all portions of rural districts.

Now it mostly happens that authorities themselves do not apply for urban powers under section 157 until villages have become fairly populous, and as much harm as possible perpetuated from the construction of crooked, cramped streets, with houses stuck here and there like so many nine-pins, jutting into roadways, over sewers, jerry built, and sanitary laws utterly neglected.

Thus it may be seen that the Local Government Board condone with this irregular mode of sanitary administration. If it be advantageous to have houses well built in a town, surely this should apply also to the country, and there can be no reason why the inhabitants of the latter should not have the advantage of the supervision of new buildings equal with the former.

Under the existing Act it must therefore be confessed that the sanitary administration of large villages cannot be satisfactorily carried out by rural authorities. It would be beneficial were it made statute law that when a village or township reached a population of a specified number, say 3,000 or 4,000, with a certain ratable value, that these places should be converted into Local Government districts.

The ever-recurring trouble arising from improper drainage prompts the suggestion that all drains to houses should be laid by local authorities in the same way as gas is laid on to houses by gas companies. The necessity for sound drains is more important than the conveyance of gas, and, if constructed by local authorities, the advantage would be all to the owners in increased efficiency, economy, and safety.

The formation of irregular streets should be more effectually controlled by local authorities, and power should be given them to control the direction of proposed new streets. Public convenience should have equal consideration with construction; yet streets with unsatisfactory approaches have to be sanctioned, which probably in a few years will have to be converted into highways, repairable by the inhabitants at large, necessitating an unnecessary sacrifice in the carriage of burdens on future generations. Further, a statute law enforcing a minimum width of front street where human habitations are to be erected is necessary.

As promised in the opening of my first paper in the number for February 15, I have now given a few of the sections specially affecting surveyors and inspectors, the execution of which are a source of weakness, irritation, and much needless cost. With intricacies of law we have no desire to meddle, but it is needful in the interests of public welfare that at least these sections should be made decently intelligible; that the Public Health Act, 1875, should be thoroughly revised and supplemented, and the numerous subsequent Sanitary Acts consolidated into one Public Health Act.

Steps will, it is stated, be shortly taken to constitute the Sanitary Board which has been sanctioned for Bengal, and which is expected to give a fresh impulse to municipalities in the work of devising hygienic schemes of permanent utility.

The Plumbers' Company.—The Croydon County Council have passed the following resolution:—"That the Plumbers' Company be informed that the council would consider it a great advantage if the Local Government Board would procure power for sanitary authorities to require that none but duly qualified and registered plumbers should be engaged in carrying out sanitary work."

Vegetarianism.—The *Cologne Gazette* of January 4 contains the following:—German vegetarianism receives a severe blow just at the turn of the year. Its most zealous scientific partisan, its most-quoted learned authority, the writer of so many leaflets and polemical pamphlets, Dr. Alanus, sends the vegetarians his farewell. "Warum ich nicht mehr vegetarisch lebe" (Why I no longer live as a vegetarian), such is the title of an article sent to the Rhenish *Courier* by Dr. Alanus. The former preacher of the vegetable diet writes:—"Having lived for a long time as a vegetarian without feeling any better or worse than formerly with mixed food, I made one day the disagreeable discovery that my arteries began to show signs of atheromatous degeneration. Particularly in the temporal and radical arteries this morbid process was unmistakable. Being still under 40 years of age, I could not interpret this symptom as a manifestation of old age, and being furthermore not addicted to drinking, I was utterly unable to explain the matter. I turned it over and over in my mind without finding a solution of the enigma. I, however, found the explanation which I had sought so long quite accidentally in a work of that excellent physician, Dr. E. Monin, of Paris. The following is the verbal translation of the passage in question:—'In order to continue the criticism of vegetarianism we dare not ignore the work of the late lamented Gubler on the influence of the vegetable diet on the chalky degeneration of the arteries. Vegetable food, richer in mineral salts than that of animal origin, introduces more mineral salts into the blood. Raymond has observed numerous cases of atheroma in a monastery of vegetarian friars, amongst others that of the prior, a man scarcely 32 years old, whose arteries were already considerably indurated. The naval surgeon, Treille, has seen numerous cases of atheromatous degeneration in Bombay and Calcutta, were many people live exclusively on rice. The vegetable diet, therefore, ruins the blood vessels and makes prematurely old, if it is true that man "is as old as his arteries." It must produce at the same time tartar, the senile arch of the cornea, and phosphaturia.' Having unfortunately seen these newest results of medical investigations confirmed by my own case, I have, as a matter of course, returned to a mixed diet. I can no longer consider purely vegetable food as the normal diet of man, but only as a curative method, which is of the greatest service in various morbid states. Some patients may follow this diet for weeks and months, but it is not adapted for everybody's continued use. It is the same as with the starving cure, which cures some patients, but is not fit to be used continually by the healthy. I have become richer by one experience, which has shown me that one single brutal fact can knock down the most beautiful theoretical building."

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THE REMOVAL AND DISPOSAL OF HOUSE-REFUSE IN LONDON.*

By D. RICHARDS, Assoc. San. Inst., Chief Sanitary Inspector of Battersea.

I AM in favour of burning the refuse—not, however, by artificial but by natural means, through the land, believing it to be the most economical and certainly the most healthful method, and will place before you, in as comprehensive a manner as possible, what may be described as the wasteful and the useful disposal of house-refuse.

THE WASTEFUL DISPOSAL.

I will take as the unit of wastefulness the ordinary dust-bin, well described as being more like the old hog's-wash tub than a receptacle for ashes. Assuming that each house in London has one, we have about 550,000 units of wastefulness, each carrying on the first stages of destruction by the decomposition of animal and vegetable matter, as evidenced by the constant escape of disagreeable odours from them; and these, too, close to our doors and windows, and in some cases even inside the house.

These noxious odours are occasioned by, and bear a good illustration of the phrase, "Dirt is matter in the wrong place," and are nothing more nor less than Nature, through her chemistry, making an effort to send back to the earth the elements necessary to replenish it. Use what means we will to confine it, whether it be brick walls or closely-fitting sanitary bins, it forces its way through and vitiates the air.

The amount of waste thus going on might be compared to so many thousand jets of steam blowing off to no purpose, but which would, if properly concentrated, constitute a force of immense power. In other words, rich fertilising gases are being lost in the atmosphere, which, if properly utilized, would, instead of polluting the air, be assimilated in Nature's laboratory, and thus give a powerful impetus to the production of animal and vegetable life.

The system, too, of storing up offensive matters for weeks together, until it becomes a mass of corruption, is so great an evil, that the wastefulness becomes quite a secondary matter. What is more sickening than these vapours, or what more likely to unfavourably affect health than decaying animal and vegetable matter? For notwithstanding the fact that householders are constantly being cautioned against placing organic matters in the dust-bin, it is done, and will be done unto the end of the chapter, for this reason: Man has been endowed with the instinct to bury his impure refuse, and he straightway buries it in the dust-bin, for want of a more suitable place; with what result we, as sanitary inspectors, know only too well, by the number and the nature of the complaints we receive; indeed, there are probably more nuisances arising from foul and offensive dust-bins than from all other causes put together. As a public and widespread nuisance, I consider it has not received from sanitarians the attention it certainly deserves.

It is true that a few years since, when cholera was expected, measures were adopted for the speedy removal of house-refuse; but these, like most things adopted under pressure of excitement, soon gave place again to the old system of the accumulation of so many weeks' refuse instead of that of so many days'.

One cannot pass from the dust-bin to the dust depôt without bestowing a moment upon the process of collection. I think no better system could be devised for aërating and diffusing the accumulated gases disturbed by removal than the one commonly adopted. To begin with, it is first taken from the bin and carefully turned over and over by the dustman in his search for bones, rags, and what-not. It is then carried in an open wicker basket through the house into the street, where it is thrown lightly into the cart, fully exposed to the influence of the sun and air, and so conveyed through the streets to the depôts, where it arrives a much less offensive substance than when first disturbed. In fact, the manner in which house-refuse, fish-offal, manure, skins, bones, and offensive matters generally are collected and conveyed through the streets of London at all hours of the day, is really a disgrace to this centre of civilisation. No provincial town of note would allow such objectionable matter to be exposed in the streets after 8 o'clock in the morning.

The means adopted for the disposal of refuse after the collection at the depôts are varied, and for the most part in a state of chaos, the principal object being to get rid of it by any and every means that can be devised. Before the amendment of the Building Act, it was the practice to excavate the sand and gravel from the sites of proposed houses and streets and fill in the space with dust-bin refuse. Within my own knowledge, prior to the passing of this Act, a low-lying tract of land, usually covered with stagnant water—a sort of Black Sea—was used as a dust shoot. Thousands of loads were poured into it, until "dry land appeared," and upon it roads were laid out, and streets of houses erected—houses as fragile in their structure as their foundations were sponge-like. The alleged advantage to be derived from the latter was, that in case of an earthquake, it would act like a spring, and so break the force of the shock. I am tolerably certain, however, that a very slight shock would be sufficient to bring these houses down like a house of cards. The above circumstance was used by the sanitary authorities as evidence in supporting the promotion of the Bill.

This practice happily is no longer permitted, but by stopping such outlets a wide field was closed for the disposal of house-refuse in the metropolis and other places had to be found; the low-lying marshes at the mouth of the Thames affording a resting-place for some, whilst smaller quantities are barged out to sea and there deposited. But by far the greater portion is now carted to numerous depôts in our midst, where it accumulates, forming mountains of heated matter tainting the air with its unpleasant odours, to be eventually turned over and over, sorted and sifted. The most valuable products, cinders and fine ash, are disposed of to brick-makers and others, and the soft core is either burnt on the premises or mixed with manure and sold to farmers.

The process described is carried on principally by women, who work up to their waists in filth, their condition being little better than that of slaves. No provision is made for their washing themselves, and they are, therefore, obliged to carry their dirt through the streets to their miserable homes, forming as degrading a spectacle as it is possible to conceive.

But of all the methods adopted, the most recent one, that of destruction by cremation, takes the highest place for wastefulness. As a destructor of organic matter its thoroughness cannot be disputed, although its power of utterly destroying material or

* Read before the Association of Public Sanitary Inspectors of Great Britain, March 1, 1890.

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reducing the amount to be disposed of is exceedingly limited. It has the credit of destroying in bulk something like 75 per cent. of refuse; its power of reduction in weight would, however, be a better test of its usefulness. It is doubtful whether 50 per cent. or anything approaching that in weight, is actually destroyed, especially where the dust is allowed to remain some weeks before collection.

Taking, however, as a basis the lowest estimate, 25 per cent. upon 2,268,000 cubic yards of refuse (the estimated amount collected in London yearly), it will then leave 567,000 cubic yards of clinkers and fine grit to be disposed of annually, and that, too, at a time when there are thousands of tons of the same kind of material being produced in the foundries and factories of London, the removal of which is only accomplished at great expense. It will, therefore, require no prophet to foresee a time when the disposal of clinkers and fine ash will be the burning question of the day. The cost, too, in these days of heavy taxation must not be lost sight of. The expense of erecting machinery capable of cremating or purifying the whole of the refuse in London (judged by the outlay at Whitechapel, where the sum of £15,000 was expended in making provision for dealing with the refuse collected from 8,000 houses), would amount to the enormous sum of £1,031,000. What the annual cost of working would be can only be conjectured.

I think it must be admitted by those who have had experience, that the vast amount of ashes and clinkers left over after purification, is far too large to be ignored, and not good enough to be useful; and, furthermore, the time is surely not far distant when a foul, overflowing dust-bin will be considered to be as much out of place as an open drain or cesspool is to-day. Can we, then, consistently object to small accumulations, and yet permit some 300 pestilential dust depôts to spring up around as many dust destructors?

I say no! The dust depôt, with its sickening atmosphere, must be removed from amongst us. What, then, is to be done with the enormous amount of refuse collected each year in London, amounting, as I have stated, to no less than 2,268,000 cubic yards, or a quantity sufficient to cover 1,400 acres of land with a layer a foot thick? What inexhaustible outlet is there to be found for all this? Under the head of "The Useful Disposal of Refuse," I will endeavour to answer the question.

The Useful Disposal.

For my unit of usefulness I will take the cottage garden, and I know of no sight more beautiful or more interesting than a cottage garden in the springtime, with its row upon row of healthy plants, so full of vigour, giving every prospect of an abundant return for the labour expended upon it by its owner. But what is the secret possessed by the cottager, that enables him to secure such an abundant crop? The whole secret is that nothing is wasted. A portion of everything gathered is returned again, either from the refuse pit or the pigsty. A good husbandman would no more expect to draw continually upon his garden without making some return, than he would expect to keep getting milk from his cow without feeding the animal. Take, too, the cottage garden on a larger scale; I refer to allotments. Within a short distance from London many of such may be seen, and one cannot help being struck by the wonderful difference existing between the crops on one side of a fence, and of those on the other. The nature of the soil and the aspect are the same, but on the allotment side will be seen vegetable life in profusion, every corner filled to overflowing with productive plants; whilst on the other side is an ordinary farmer's field, with a poor, meagre, half-starved looking crop, suffering from what medical men describe in the human being as low vitality; at the best producing less by five-fold than the adjoining allotments. The cause of this difference is not far to seek; on one side nothing is wasted; a little of everything taken from the land is returned to help replenish the loss. On the other side, the whole of the produce is sent off to the large towns, and swallowed up in the great vortex from which nothing returns.

It is true that in the latter case artificial manures are used, for which this country expends some tens of thousands of pounds annually, but it affects plant life, I believe, in very much the same way as temperance men tell us alcohol affects the human body. It stimulates for a short time, but leaves behind no material improvement.

If further proof were needed to show what a useful disposal of refuse can do, even upon apparently barren land, when directed by wisdom, I would ask you to observe those little plots of land by the moor, the heath, or the common; bits cribbed out of the common land no doubt in days gone by, but nevertheless furnishing splendid examples of what might be done in a much larger way with the thousands upon thousands of acres of uncultivated land within easy reach, if only a more useful and practical disposal of refuse were adopted.

Two good examples of the useful disposal might be taken, and I will first quote from a paper read on scavenging, before the Sanitary Congress at Glasgow, by Mr. John Young, Surveyor. He says: "The natural destination of manurial refuse is, of course, the land, where it becomes the food of plants. Scotch farmers, as a rule, prefer bulk manure, when it is available, to chemical manures. That being so, we endeavour to place our city manure within the reach of as many of them as possible. The result is, that we supply manure to 2,400 farmers, whose holdings are situated over fourteen different counties."

I obtain my second example from London. It is gratifying to know that one parish in London at least—Newington—has had the courage to grapple with these difficulties, and has found a useful and profitable way of disposing of its own refuse and also taking some from adjoining parishes, by sending it into the country, where it finds a ready sale among the farmers; the only drawback in the system being the necessity of storing and mixing the refuse in a thickly populated neighbourhood. This, I am informed, will be soon remedied by removing the whole of the refuse at once into the country.

So far I have endeavoured to prove that the present mode of removal of refuse—and, for the most part, the disposal of it—is insanitary and wasteful; that there are at least two millions and a quarter cubic yards of material, containing a large amount of manurial properties, collected in London yearly, nearly all of which, under the present system, we throw away, whilst at the same time despatching vessels to foreign countries for guano to manure our fields. Let us hope that in a period not very far distant, we shall exercise a little more practical wisdom, and, like the economical Chinese, we, shall fertilise our soil with the refuse of our cities. I have also given a few examples of what can be done where refuse

and labour are turned to proper account in the garden, allotment, and on seemingly barren land.

I am fully persuaded that the great expanse of waste and uncultivated land in this country is the only practical, profitable, and inexhaustible outlet for house refuse that can be found; where the hard core can be used for land draining and road making, the finer material can form a fertiliser for the soil, and its manurial properties can be readily absorbed into plant life, where sun and air, frost and rain, will carry on gratuitously the work now proposed to be done by cremation.

To secure that end the refuse should be collected before decomposition has set in, and means adopted for rapid transit from town to country, from the dust-pail to the land. I am supported in this view by our venerable President, who, in his address to the Health Congress at Brighton, said: "All decomposition meant waste, all waste was avoided by immediate application to the land, beside which, bad smells were thus prevented, and this method was, therefore, a matter of economy and beneficial to health."

Dr. Carpenter, too, speaking of refuse, says: "The cities do not want it, the land does. The result is that the material is more or less destroyed, and the whole country suffers a grievous wrong."

It has been said, and wisely too, that if our laws and customs were changed, there is plenty of room for the people on unoccupied land at home. If properly developed, England could produce 50 per cent. more of the food than it now does, and employment for hundreds of thousands.

The question of the utilisation of all refuse is, I admit, one which goes far beyond the scope of my paper, but one that must ultimately receive the serious attention of the future Ministers of Health and of Agriculture. What must be more fully realised by our sanitary reformers is, that the gradual diminution of the area under cultivation, and the decrease of the producing power of the land, not only means total dependence upon foreigners for our food supply, but by withdrawing from the land those who should be employed upon it constitutes the primary cause of excessive over-crowding in our towns.

It will be said by some, that refuse will not repay the cost of transit. I would ask, does it pay now, or is it more likely to pay for removal when the only valuable portion of it is destroyed by cremation, without reference to the question of expense in destruction.

On the other hand, it may be said, the land will not pay. Not a rent, perhaps, but if enough to support those engaged upon it, then something will be gained, and a step will be taken towards accomplishing that truth propounded by Dean Swift, namely, "That whosoever could make two ears of corn, or two blades of grass, to grow upon a spot of ground where only one grew before, would deserve better of mankind, and do more essential service to his country than the whole of the race of politicians put together."

ALTERATIONS are being made to St. John's Church, Carlisle, including the ventilation, Baird, Thompson, & Co.'s new and improved self-acting exhaust ventilator being adopted for the extraction of the vitiated air, and their latest improved form of air-inlet "panel" ventilator being used for the introduction of the fresh air without draughts.

SMOKE PRODUCTION AND PREVENTION IN THE PROVINCES.

DR. BARWISE, Medical Officer of Health for the county borough of Blackburn, has recently presented to the Health Committee an important report on the smoke nuisance. Acting on the instructions of the committee, Dr. Barwise has investigated not only the extent of the smoke nuisance in Blackburn, but the means actually in use and available for its abatement.

In scope and particularity of treatment the report probably excels any hitherto presented to a local sanitary authority, and, on the whole, may fairly be regarded as a notable addition to the records on the subject.

The report certainly fails to give or even suggest any reply to the inquiry which it advances as to whether "smoke can be consumed without diminishing the steam raised from a given weight of fuel." Except in one instance, there is no information whatever to be found in the report as to the steam raised in proportion to the coal burned. The whole of the comparative statements and tables which the report contains are based on a comparison of the smoke produced from certain boilers of furnaces stoked by certain mechanical appliances, and by hand. In some instances the quantity of coal actually burned is stated, but there is no information given as to the dimensions of the boilers, the amount of water evaporated, or any other data on which to found even the roughest estimate as to the steam raised in proportion to the fuel burned. It is, of course, as impossible to estimate the steam raising efficiency of furnaces from the record of the fuel they consume as it is to determine the brain work of men from the quantity of food they eat.

The report deals, too, only with a certain class of furnaces known as "mechanical stokers," which are by no means the most important in considering the general question of fuel economy, although it may be conceded that they possess the practical advantage of being readily adaptable to existing boilers, and are, under suitable conditions, capable of preventing smoke.

No record of the comparative value of various systems could be considered complete without it contained details of the working of a larger number of appliances, and especially of furnaces fired with gaseous instead of solid fuel. Thus, from the steam users' and engineers' point of view, the report may be said to be valueless. But this does not lessen its value for its own purpose. As we have frequently pointed out, the question of the relative economy of certain appliances is not that with which sanitary authorities have to deal. With them the question is limited to reducing smoke production to a minimum. We dealt with this branch of the subject at some length in commenting upon the action of the Halifax Corporation (*see* SANITARY RECORD, September 16, 1889).

The value of Dr. Barwise's report lies mainly in the considerable number of careful observations which he has taken and recorded. These form a most important body of evidence, on which not only the Health Committee of Blackburn, but local sanitary authorities generally may act. For example, Dr. Barwise's report shows that in seven specified mills in Blackburn the production of black smoke is considerably less than one minute per boiler per hour. And this is stated not as the result of a single observation, but as the result of a series of consecutive

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observations. The report further shows that from the chimneys of not less than 132 separate firms the average production of dense smoke per boiler per hour did not exceed 2·7 minutes, and that from the chimneys of 16 of these firms—using the same description of boilers—the quantity of dense smoke emitted was only 1·3 per minute. The report is accompanied by a diagram, illustrating 220 observations on smoke emitted from various chimneys during one hour. The smoke is divided into "dense black" smoke and "moderate" smoke. The latter term is not in any way defined, but the diagram shows that the "dense black" smoke emitted ranges between some seconds less than one minute, and 34 minutes in the hour, and the "moderate" smoke between 15 minutes and the whole hour.

From the statements in the report as to the comparative emission of smoke from chimneys where mechanical stokers are used, and from those where hand firing is adopted, it appears that the smoke emitted from the former averages less than half a minute per hour less than from the latter. This practically confirms the result of observations elsewhere and the opinion of competent authorities that hand-firing may, under suitable conditions, compare favourably with stoking by mechanical appliances.

Dr. Barwise very pertinently points out that an unsatisfactory feature of the smoke question is that manufacturers in similar trades are in some towns permitted to make smoke to any extent, while in others they are limited to one minute in the hour. He gives a table showing the different regulations in force in eighteen towns, and urges the desirability of some uniform standard being adopted under a Smoke Prevention Act applicable to the whole country, as in the case of the Alkali Act, under which a manufacturer is not permitted to discharge more than a certain amount of acid fumes, no matter in what district he may carry on his trade.

The chief recommendations with which Dr. Barwise concludes his report are :—

(*a.*) That one minute of "dense black" smoke per boiler per hour should be taken as the standard, and seven minutes as the maximum per chimney.

(*b.*) That local authorities should specify the means of abating the smoke nuisance to be "the use of mechanical stokers of the coking class."

He also recommends that a list of appliances should be furnished to offenders by sanitary authorities, together with an intimation that the use of any of the appliances named therein shall be held to abate the nuisance.

The suggestion to fix a standard to govern the reports of inspectors, and upon which to found the necessary legal proceedings, may well be approved as a tentative measure. But the suggestion that sanitary authorities should specify the means by which smoke must be abated—and particularly that they should limit those means to one class of appliances—appears quite inadmissible.

No doubt, under the sections of the Public Health Act cited by Dr. Barwise, local authorities are required to specify the means by which some nuisances must be abated; but Dr. Barwise does not make it apparent that the smoke nuisance is included among these nuisances either by precedent or legal decision.

Space does not permit further comment at present; but we may refer to these latter considerations at a future time.

A HOSPITAL FOR THE INSANE.

A COMMITTEE was appointed by a resolution of the London County Council last April to consider the desirability of creating a hospital for the insane, with the result that the suggestion was most favourably received. The committee was composed of Mr. Brudenell Carter, ophthalmic surgeon to St. George's Hospital, Mr. Carr Gomm, late chairman of the Committee of the London Hospital, Mr. Longstaff, Mr. Burns, Mr. Hutton, chairman of the Building Act Committee of the Council, Captain James, chairman of the Sanitary and General Purposes Committee of the Council, and Mr. Martineau, chairman of the Asylums Committee of the Council. They were instructed "to inquire into, and to report to the Council upon, the advantages which might be expected from the establishment, as a complement to the existing asylum system, of a hospital with a visiting medical staff, for the study and curative treatment of insanity." Mr. Brudenell Carter was elected chairman of the committee. The committee arranged that they should apply to various eminent medical practitioners to attend and give evidence at their meetings. These names included not only experts in insanity, and physicians chiefly engaged in the treatment of diseases of the nervous system with which insanity is not necessarily associated, but also physicians and surgeons in more general practice. Amongst those who have given evidence are Sir Andrew Clark, Dr. Buzzard, Sir John T. Banks, Dr. Quain, Sir James Crichton Browne, Mr. Victor Horsley, Dr. Clifford Allbutt, Dr. Thomas Bryant, Dr. Batty Tuke, Dr. John Marshall, Dr. Whipham, Dr. Charlton Bastian, Dr. David Ferrier, Dr. Stephen Mackenzie, Dr. Hutchinson, and Dr. Richard Gowers. All of these are strongly in favour of the proposed hospital. In addition to these witnesses expressions of opinion were obtained from the actual superintendents of asylums, and a few other persons of admitted authority, such as Dr. Lockhart Robertson, Dr. Savage, and Dr. Dunlop, Medical Officer of St. Pancras Workhouse, who has possessed unusual opportunities of observing the actual working of the present asylum system from outside. Naturally among the asylum superintendents, a feeling of decided opposition to the proposed hospital was only to be expected. Out of the 65 gentlemen from whom replies have been received, 49 are dissatisfied as regards the facilites afforded by the present system for the investigation of disease, 12 are satisfied, and 4 are ambiguous. As regards the proposed hospital, 24 approve without qualification, 17 approve with some qualification, 15 disapprove, and 9 are ambiguous. In reference to the facilities afforded by the present system for the careful treatment of individual cases, 41 are dissatisfied, 17 are satisfied, and 7 are ambiguous. When the idea of the hospital was first mooted, a certain number of superintendents wrote letters and articles to medical journals condemning and ridiculing the suggestions on which the inquiry was to be based. In spite of these, however, the statistics above show that there is among these superintendents a marked preponderance of opinion in favour of the view that the present asylum system leaves much to be desired, and that the proposed hospital would be likely to exercise beneficial influence. One gentleman regards the idea as "a wild mischievous dream," and the scheme "unworkable and pernicious."

In the able report which has just been issued by

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the committee entrusted with this urgent and important question, the opinions of the physicians and surgeons who gave evidence are set forth. They are full of interest, and would open the eyes of many as to the iniquities in the working of our present asylum system. For instance, Sir J. Crichton Browne points out that although "there are in some asylums very able scientific medical men as medical officers, and there is a little scientific work going on, still the medical and scientific work carried on in the largest asylum, nay, in all English asylums put together, cannot for one moment be compared, as regards its character or results, with what is done in the smallest London hospital; and a large proportion of the cases that are admitted into county asylums in England do not get medical treatment at all; it is not attempted." This statement alone suffices to show how great a need there is for reform.

A succinct account as to the nature of the disease of insanity shows us that it is at least highly probable that the initial changes in the case of insanity are analogous to (although unlike) those of rheumatism. It is not unlikely they depend upon an alteration in the character of the blood, or of the fluids formed from it by which the cells of the brain are stimulated to action. The treatment of the disease of insanity has not shared in the progress which has been made in regard to other diseases. It has been deprived of the benefits of the hospital system, and what progress there has been, has been due rather to the progress of humanity than to the progress of medical science.

Again, medical students have no opportunities of obtaining the knowledge which is required for the discharge of those duties which the law requires of them. The existing asylums, even if they were thrown open to students, are too far from the hospitals and medical schools to be systematically visited. A small teaching provision, it is true, has been made at Bethlehem, under Dr. Savage, but it is totally inadequate for the requirements of London students. Therefore in this direction the hospital would supply an obvious want. Of course the London County Council are fully aware that it is not for them to spend the money of the ratepayers in affording facilities for the conduct of medical education. It is evident, however, that the facilities are required in the public interest. The facilities, however, cannot be procured by any voluntary effort, neither can they by those who are engaged in medical teaching, on account of the legal disabilities which attend upon insanity. The committee, after careful consideration upon the size the hospital should be, think that it should contain 100 beds, equally divided between male and female patients. The staff should be composed of 4 visiting physicians, with a senior and junior resident physician; and the visiting staff should be assisted by the following consultants, namely, a surgeon, an aural surgeon, a laryngologist. a gynecologist, and an ophthalmic surgeon. The 4 visiting physicians, it is thought, should also hold office as physician or assistant physician at some general hospital, thereby obtaining the service of those accustomed to the habit of investigating disease, and having a wide acquaintance with general medicine, and the necessary readiness in teaching. The locality of the hospital has called forth various expressions of opinions. Those who maintain that "moral," and not "medical" treatment is the better treatment in regard to insanity think the site should be a suburban or rural one. As, however, the proposed hospital is advocated specially for the purpose of bringing "medical" treatment to aid the "moral," and a visiting medical staff of the required quality could only be obtained in a great city, and could not be expected, unless very highly paid, to visit regularly at an institution a good distance from their homes, it seems to be a matter of necessity that the hospital should be situated in London. Another important point in connection with the "site" question is whether it is desirable to have an out-patient department. Of course there is much to be said for and against in this respect. Doubtless many incipient cases might be brought, and might be prevented from becoming worse by out-patient treatment, or they might be treated when discharged from the hospital.

It is thought the cost of the hospital would be about £300 a bed at least. Its maintenance, too, would be expensive. The benefits, however, it would confer upon those suffering from mental disease would be so great, that the expenses in starting such an institution, &c., ought to be laid on one side. The tendency of lunacy legislation is to abolish private asylums, and in a Bill now before Parliament there is a clause to stop the granting of new licences. If private asylums are to be abolished, then in a few years the well-to-do classes will be deprived of that special skill which they now obtain; but if registered lunatic hospitals are erected in their stead, then they will be able to consult the most eminent men of the day, and receive the best treatment.

Mr. Brudenell Carter, at the meeting of the County Council on March 12, submitted the following report from the Special Hospital Committee recommending "that an adequately-equipped hospital, containing 100 beds, for the study and curative treatment of insanity in pauper lunatics of both sexes" be established in London, under the direction and control of the Council. Mr. Cooper moved an amendment deferring the consideration of the report for six months, so that there will be ample time for the consideration of the question on all sides.

CITY DUST AND REFUSE.—The report of Mr. W. Swale, superintendent of City scavengers, shows that during the year ending Dec. 31, 1889, there had been removed from the City streets 26,990 vanloads of slops and sweepings, and 38,389 vanloads of dust and trade refuse—a total of 65,379 vanloads. This is an increase on every previous year. The refuse has been removed from Letts' Wharf by means of 831 barges, 16 per week, as follows:—462 freights of manure, realising £435; 274 freights of ashes and breeze, realising £932; 95 freights of hardcore slops, &c., costing £271 for removal. The amount received for the sale of paper, string, rags, iron, &c., was £1,748. Among other items, over 1,000 tons of waste paper had been sold. The total receipts for the year were £3,116. The "destructor" apparatus had been at work during 292 days of 16 hours, and during that period 15,842 vanloads had been burnt, leaving a residue of 3,084 loads. The superintendent was afraid the income would be seriously reduced during the present year, in consequence of the difficulty of disposing of the manure, even when it was given to the farmers. He considered that the system of sorting and burning instead of shooting the dust direct into the barges effected a saving of £4,000 a year.

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COMPULSORY NOTIFICATION OF INFECTIOUS DISEASES.

SINCE our last issue, the additional local authorities enumerated in the subjoined list have adopted the Infectious Disease (Notification) Act, 1889, for their districts. The system of compulsory notification of infectious disease is now in force in London, in 56 large towns under separate local Acts, and in other 436 urban, 311 rural, and 17 port sanitary districts. The aggregate population at present under the system is, therefore, about 18,854,000, out of a total population of 25,974,439 in England and Wales at the census of 1881.

Name of Authority.	Population (1881).	Date on which Act comes into force.
Urban Authorities:—		
Abergele and Pensarn...	1,916	May 1, 1890.
Awre	1,179	Jan. 20, 1890.
Bath	51,835	March 1, 1890.
Bridgwater	12,007	,,
Builth	1,424	March 25, 1890.
Calne	3,405	,,
Cleator Moor	10,420	March 21, 1890.
Colne & Marsden ...	11,971	April 1, 1890.
Cromer...	1,568	March 25, 1890.
Croston...	1,791	,,
Daventry	3,859	March 15, 1890.
Downham Market ...	2,633	,,
East Stonehouse ...	15,041	Dec. 18, 1889.
Godalming	2,595	April 6, 1890.
Ham Common	1,349	March 1, 1890.
Haverfordwest... ..	6,398	March 8, 1890.
Hinderwell	2,467	March 6, 1890.
Huntingdon	4,228	March 21, 1890.
Ipswich...	50,546	April 1, 1890.
Littleborough	10,406	Jan. 1, 1890.
Llandudno*	4,839	March 1, 1890.
Monk Bretton	2,918	March 5, 1890.
Newhaven	3,806	April 1, 1890.
Newnham	1,455	Jan. 20, 1890.
Newport (Salop) ...	3,044	March 10, 1890.
Northowram	3,294	April 1, 1890.
Richmond (Yorks.) ...	4,502	March 31, 1890.
St. Alban's	10,931	March 10, 1890.
St. Ives (Hunts.) ...	3,038	March 1, 1890.
Southowram	3,036	May 1, 1890.
Towyn	3,363	April 1, 1890.
Warsop...	1,329	March 1, 1890.
Westbury-on-Severn ...	2,262	Jan. 20, 1890.
Rural Authorities:—		
Abergavenny	8,345	April 3, 1890.
Battle	8,748	March 25, 1890.
Belford...	5,737	April 1, 1890.
Berwick-on-Tweed ...	7,050	,,
Boston	24,463	March 15, 1890.
Calne	5,215	Feb. 2, 1890.
Chailey...	10,373	March 25, 1890.
Chichester	829	April 2, 1890.
Docking	17,510	March 25, 1890
Hemsworth	11,106	March 17, 1890.
Holywell	33,268	March 1. 1890.
Lampeter	8,644	Feb. 7, 1890.
Ledbury	12,605	Jan. 6, 1890.
Llanelly	22,625	March 25, 1890.
Marlborough	6,390	March 1, 1890.
Seisdon...	12,692	March 25, 1890.
Sherborne	7,642	,,
Stockport	9,040	,,
Westbury and Whorwelsdown	18,659	Jan. 20, 1890.
Whitby...	9,921	May 1, 1890.
Wolstanton and Burslem	30,995	March 8, 1890.
Port Authorities:—		
Barnstaple	—	
Bridgwater	—	March 1, 1890.
Hull and Goole... ...	—	April 1, 1890.
Newhaven	—	April 1, 1890.
Total ...	516,622	
Population of Districts given in previous numbers	10,692,153	
Grand total ...	11,208,775	

* The compulsory notification clauses in the Llandudno Improvement Act, 1879, have thus been superseded by the Act of 1889.

THE INSTITUTION OF CIVIL ENGINEERS, which was founded on January 2, 1818, had in January 1890 on its roll 1,673 members, 2,698 associate members, 19 honorary members, 436 associates, and 978 students. Together 5,804, against 5,616 at the same date last year.

VEGETABLE BUTTER.—It is stated in a contemporary that within the last few months a new trade has arisen in India, which has attained extraordinary dimensions. About two years ago a German chemist, Dr. Schlunk, discovered that excellent butter could be made from cocoanut milk. It is, according to a Bombay newspaper, pleasant to taste and smell, of a clear, whitish colour, singularly free from acids, easily digestible, and an incomparably healthier and better article of diet than the cheap poor butters and oleomargarines of European markets. The manufacture is carried on in Germany, where one firm turns out from 3,000 to 4,000 kilogrammes daily. The cocoanuts required are imported from India, chiefly Bombay, in large and increasing numbers, and the trade seems likely to attain still greater importance.

UNDERGROUND KITCHENS.—Dr. G. Danford Thomas held an inquest recently at the Islington coroner's court on the body of Sophia Johnson, aged three years, the daughter of a wood chopper, living at 28, Blundell Street, Caledonian Road. The evidence showed that the father of the deceased child, who had a wife and five other young children to maintain, had lately been out of work, and when employed rarely earned more than £1 a week. He paid 4s. 6d. a week for two underground kitchens, the walls of which were described as being damp to the height of four feet. The cot in which the child had been lying was placed against one of the walls, and one morning she died suddenly before a doctor could arrive. Dr. W. Jackson, of Caledonian Road, stated that the child, who was very delicate, died from convulsions when suffering from acute peritonitis, and he was decidedly of opinion that death was accelerated by the damp and unhealthy condition of the kitchen in which he found the child. Both kitchens were unfit for human habitation, and, if he had to live in them, he should expect to have rheumatic fever within a week. He had been in most of the houses in the row, but not one was in such a bad condition as No. 28. He understood that the houses belonged to a widow, and that they were heavily mortgaged, the owner only realising enough in rent to defray the interest of the mortgage. The Coroner said the 103rd section of the Metropolis Local Management Act laid down certain conditions as to sanitation, light, and air, which must be observed before underground kitchens could be occupied as dwellings. He asked whether a sanitary inspector or parish officer had examined the premises in question. Mrs. Johnson replied in the negative. The Coroner added that it was the duty of the district surveyor under the London County Council to inspect these underground dwellings. The jury, in returning a verdict according to the medical evidence, requested the coroner to direct the attention of the Islington Vestry and the district surveyor to the fact that the kitchens were unfit for human habitation.

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A PARIS BAKERY.

By Emma Brewer.

We have no such establishment in England as this mill and bakehouse combined, and, therefore, a visit we were able to make to it by the courtesy of the *Assistance Publique* may prove of interest to those who study the question of supply and demand.

This bakery is an immense block of buildings situate in the Rue Scipion, and has three entrances. As one approaches there are but few outward indications of the activity and life within. The building is disposed round a court-yard one side of which is given up to the offices, a second to the dwellings of five of the work-people, of whom there are seventy, and the other two sides are devoted to the bakery. It has not always been a bakery. On the contrary, it was used as a sort of almshouse for the sick and infirm when it first fell into the hands of the administrators of the poor in 1639 under the name of St. Martin's Hospital. After twenty-three years' service in this direction it was joined to the General Hospital Administration, and in 1675 the bakery, which up to this time had been established in the Salpetrière, was removed to this building, which was henceforth to serve all the general hospitals with bread.

The General Hospitals obtained a great part of their flour from grain grown on their own farms, and had it ground in three mills, one of which was situate in the mouth of the Seine (Bièvre) and the other two on the hills bordering the buildings of the Salpetrière, until at length Louis XV. sold the immense manufactory at Corbeil to the general hospitals, and it was formed into a mill, and so remained until 1838.

After the Revolution, when the reorganization of the hospitals took place, the council strove to unite the Scipion Bakery to similar establishments existing in individual hospitals, and thus it came to pass that in 1795 the bakery of the Incurables, and two years later that of the Hotel Dieu, became one with the Scipion Bakery, under the name of the Boulangerie Centrale of Paris. Such is a rough outline of the origin of the Paris giant bakery.

In 1850, owing to satisfactory experiments made by the Prefect of the Seine on a small scale, it was determined to unite the grinding of the grain with the making of the bread in one and the same building, and consequently a mill was constructed in the Central Scipion Bakery at a cost of £12,000, great part of which outlay was undertaken by the city.

Since 1856 the economic advantages promised by having a mill on the spot have been fully realised; a dough of sufficient whiteness and equal in taste and hygienic properties to the best bakers' bread can now be obtained with flour sifted to 75 per cent.; that is to say 25 per cent. only of the bran is removed, whereas bakers' bread is made of flour sifted to 66 or even 63 per cent.

The amount of bread made up daily is 25,000 kilos (each kilo weighing 2·204 lbs.); 10,000 kilos are for the hospitals, hospices, and charitable institutions, and 15,000 for the depôts of sale in various parts of Paris where the poor and the workmen may purchase it at a lower price than at the bakers. All the loaves are two kilos in weight.

The administration have gradually added to the plant; for example, in 1858 they bought a smoke-consuming apparatus, which economises fuel and also added a tenth oven. In 1860 they adopted a ventilator, the so-called Thermo-Aspirateur-Perrigault, to prevent the heating of the bakehouse.

A huge bread store was built in 1861, and at the same time magazines for corn and flour were added. These last are a great convenience, as hitherto the grain and flour had been kept in divers localities, and at some distance from the service.

The administration has been very wise in inviting experiments likely to conduce to the improvement of the manufacture. The Rue Scipion establishment has consequently become a centre of experimental inventions. One of the most interesting experiments made here is associated with the name of M. Mège Mouriès. In studying the composition of a grain of corn with the microscope this gentleman recognized that immediately under the cortical envelope there lay a hard point in which the principle of germination and fecundation is developed, and which contains more nitrogenous matter than other parts of the grain. This little point, which is so eminently nutritious, often adheres to the husks of bran after grinding, and forms what is known as brown groats, which were rejected in the manufacture of white bread, but allowed to form part of flour of the second quality. These groats were, according to this gentleman, the colouring matter of brown bread. His idea was to separate them from the other matter and use them in the making of white bread, which would consequently be rendered more nutritious; but in order not to colour the first quality bread they were to be held back until the last stage of kneading was reached. The idea was a good one, but the process of separation employed by M. Mège Mouriès was defective and costly. The director of the Boulangerie, however, improved upon this by substituting a dry method instead of a wet for the separation. He applied the sieve *aspirateur* for the separation of the groats, and then submitted them to rolling in the mill, and finally introduced them into the white flour before kneading. This process enabled the bakers to use this nitrogenous matter in the whole of the make without altering the colour of the bread at all, and with satisfactory economic results. Subsequently many other advantageous modifications have been adopted throughout the mill, and the bakery at the present moment contains a complete system for cleansing and grinding the grain. The work goes on from 6 in the morning to 6 at night, and the flour is sifted to about 74 per cent. The flour which is too brown to be used is, together with the siftings, dust, and sweepings issuing from the cleansing apparatus, sold each day.

The bakehouse is an immense hall on the ground floor, very lofty and well lighted. On one side of it, ranging from one end to the other, are ten ovens with arched openings. Seven of these are on the Lamoureux system, lighted by gas, while the others are still heated by wood. Each oven is served by two men, the one taking the bread out or pushing it in with a long iron pole, while the other arranges it for him. The dough is carried to the ovens in long shallow baskets the shape and size of the bread. The men are scantily clad on account of the intense heat, but are scrupulously clean.

On the opposite side of the hall are eight large mechanical kneading troughs worked by steam and fed from little sifters from the mill hoppers above; they do their work quietly and rapidly, and at a great saving of labour to the bakers. The work in this room is always going on, and, therefore, the working bakers are divided into two brigades, the

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first working from 7 in the morning till 5 or 6 in the evening, according to the season, the second brigade from 6 at night to 5 or 6 in the morning.

As the bread is baked it is carried into the pantry adjoining the bakehouse. This room is supplied with open bins bearing the names of the various hospitals. In these the bread is placed, and at 5 o'clock every morning is distributed to the hospital carts, which arrive for the day's supply. Great order prevails at the distribution; each conductor of a cart receiving a paper indicating the number of loaves and their weight. We tasted the bread and found it excellent.

To the right of this bread-store rises a vast building, of which the ground and first floor serve as a granary for the grain, and the third floor as a storehouse for the flour. These magazines are vast and thoroughly ventilated.

The grain comes from all parts of the world, and is kept so that a stranger could easily understand the order in which it stands. We first entered a barrack-like room, filled with stacks of sacks of grain and flour, each with a neat little label on it recording the date and all particulars concerning it, and we were called on to compare the various grain and note the difference between them and the quality of flour they produced, those from one country being finer or coarser, and producing a whiter or browner flour than those from another, and so on. We passed through a series of rooms like this and were amazed at the vastness of the work carried on and the admirable method and order preserved.

The machinery is the finest that can be made. All these wonderful machines, impossible to describe, do their work of bringing the flour to a state of perfection; it is then weighed, regulated, and put in sacks by order of merit and fineness, and last of all it is mixed in a large room where we saw it heaped up to the ceiling.

There was no sign of dirt anywhere in this vast building, and we went into every corner. Nothing is manipulated by the hand, and even if it were the hands of the workmen were as clean as those of the highest lady in the land.

THE death-rate of Exeter for the year 1889, 19·3 per 1,000, was identical with the average rate of mortality in the twenty-eight large towns. The monthly rates varied between 9·45 per 1,000 in June and 26·4 per 1,000 in February. The excess of births over deaths was 253.

BY the uninterrupted registration of the sunshine for upwards of seven years, it has been conclusively shown and acknowledged that Hastings is one of the sunniest places in the whole of the British Isles. During 1889 both rainfall and bright sunshine showed a deficiency; the former to the amount of 3¼ inches, and the latter to the amount of eighty-one hours.

OUNDLE SEWERAGE.—The Commissioners of Oundle have held a special meeting to consider plans submitted by Mr. W. H. Radford, C.E., of Nottingham, for the sewage disposal of the town, at which the engineer explained that he proposed to purify the sewage in duplicate precipitation and filtration tanks; the chemicals and filter medium being supplied by the International Sewage Purification Company. The sewage mud would be pumped into air drying pits by means of a small circular winding. The whole of the town sewage would be delivered to the site by various new pipe sewers, the sewage of one low-lying locality being pumped into a high level sewer by a small compressed air-pump placed under the street and supplied with compressed air through a pipe from the new waterworks engine. The commissioners decided to carry out the scheme in its entirety.

THE

SANITARY RECORD.

The Organ of the Association of Public Sanitary Inspectors of Great Britain, and of the National Association of Sanitary Inspectors.

MARCH 15, 1890.

The Editor will be glad to receive, for publication, announcements of meetings, reports of proceedings, and abstracts or originals of papers read at meetings of Medical Societies of Health, Public Analysts, and Sanitary Inspectors' Associations, &c.

Medical Officers of Health, Public Analysts, Town Clerks Local Board Clerks, Sanitary Surveyors, and Inspectors, are requested to send Notices of Appointments and Vacancies to the Editor, care of Messrs. W. H. ALLEN & Co., 13 *Waterloo Place. S.W.*

Should any of our readers require information relative to the taking out of patents for inventions, either English or foreign, the "Patent Correspondent" of the SANITARY RECORD *will be pleased to give them the benefit of his experience and assistance. Communications to be addressed,* Patent Correspondent, SANITARY RECORD Office, 13 Waterloo Place. S.W.

THE SANITARY RECORD will in future be published by Messrs. W. H. ALLEN & Co., 13 Waterloo Place. S.W. All matters relating to the literary portion of the Journal, and all exchange journals, periodicals, books for review, and new inventions, should be addressed to the EDITOR at above address. All business communications relating to Advertisements, Subscriptions, &c., to be addressed to the MANAGER at the same address.

THE MEDICAL DEPARTMENT OF THE LOCAL GOVERNMENT BOARD.

SEVERAL changes have recently taken place amongst the medical staff of the Local Government Board. Owing to failing health, Dr. Henry Stevens has resigned his appointment as one of the Board's medical inspectors. Dr. Stevens is a veteran in the sanitary service of the country, having held for upwards of a quarter of a century the office which he now relinquishes. During that period he has performed much good work in the cause of the public health.

His place has been filled by the appointment of Mr. R. D. R. Sweeting, M.R.C.S., L.S.A., who has for some time past acted as medical superintendent of the Western Fever Hospital at Fulham, under the Metropolitan Asylums Board. The new inspector has acquired a considerable and varied experience in the treatment of the various "fevers," and in preventive and public medicine generally.

The department has also been strengthened by the temporary appointment of Mr. T. W. Thompson, M.R.C.S., L.R.C.P., &c., the medical officer of health for a large combination of districts in Hertfordshire and Middlesex.

But, on the other hand, in addition to the resignation of Dr. Stevens, the department has, by the unexpected death of Dr. David Page on February 19, lost one of its ablest and most genial members. Dr. Page was only 44 years of age, but he had already

gained a high reputation for his learning, his accomplishments in the wide field of preventive medicine, his tact as a sanitary administrator, and, personally, his genial, upright nature.

Whilst chronicling these changes in this useful public department, we cannot avoid the reflection that the comparative smallness of its numerical strength militates against its being as widely useful to the community as it might be. The excellence of the work performed unostentatiously by the staff under Dr. Buchanan's guidance, is universally admitted, but there are numerous directions in which investigations could best be carried out by a central department, which at present have to be unwillingly neglected, or left to unofficial workers. Not only are there constantly arising occasions when a brief conversation between a local inexperienced health officer and an inspector from Whitehall, who was well acquainted with the current experiences of other districts, would facilitate the satisfactory investigation of some obscure outbreak of disease, or secure suitable advice being given to the local authority in exceptional circumstances; but there are also many larger problems, such as the etiology of diphtheria, the construction of small-pox hospitals, &c., which require to be systematically investigated. There is plenty of useful work waiting to be done by the central sanitary department of the Government.

COUNTY MEDICAL OFFICERS AND THEIR DUTIES.

THE Public Health Committee of the Lancashire County Council presented to a recent meeting a carefully drawn report, indicating what, in their opinion, should constitute the principal duties of a Medical Officer of Health to the County Council. Such a report is of considerable interest and value, and we therefore reprint it:—

"(*a*) To receive on behalf of the Council the copies of the periodical reports from the local medical officers of health, and to tabulate and report upon the same for the information and guidance of the Council. (*b*) To inform the Council whether the various Acts affecting the public health are or are not being put properly into force within any district; whether any other matters affecting the public health of a district, such as water supply, drainage, scavenging, insanitary dwellings, &c., require being remedied, so as to enable the Council to decide whether a representation should be made to the Local Government Board on the matter under section 19 of the Local Government Act, 1888. (*c*) To assist and advise the local authorities and their medical officers and sanitary inspectors as to epidemics, &c., and generally to advise them in the performance of their duties when required by them free of charge. (*d*) To assist and supervise the inspectors under the Sale of Food and Drugs Act. (*e*) To inquire and report as to the desirability of making bye-laws for the prevention and suppression of nuisances not already punishable in a summary manner. (*f*) To perform the duties and be subject to the liabilities which by the Artisans and Labourers' Dwellings Improvement Act, 1875, a medical officer is required to perform and be subject to. (*g*) To assist the Council in dealing with the pollution of rivers. (*h*) To advise the Council on any Bills introduced into Parliament with reference to (1) the public health, (2) the extension of towns, (3) the water supply of towns, (4) housing of the working-classes. (*i*) To advise as to the sanitary condition of all buildings belonging to the Council. (*j*) To devote his whole time to the duties of his office, and to hold himself at all times ready to advise the Council and its committees. (*k*) To be a county centre for all vital and hygienic statistics and other information bearing upon public health, including meteorological data from all available sources. The Committee also point out that many other important duties devolve on the Council in relation to which the advice and assistance of an experienced medical officer of health will be invaluable, such as the making of bye-laws, the execution of the Acts relating to contagious diseases of animals, and many other matters, all of which are likely to be materially increased at an early date by the transfer to county councils of additional powers. Having regard to the absolute necessity of these duties being at once properly carried out, and to the practical impossibility of the Committee undertaking them itself, the Committee recommend:—1. That a medical officer of health be appointed for the administrative county of Lancaster at a salary after the rate of £800 per annum, with a reasonable allowance for travelling expenses, the appointment to be determined by a six months' notice on either side, and that such officer be not entitled to any claim for a pension. 2. That such officer be not allowed to hold any other appointment or engage in private practice without the express written consent of the County Council. 3. That the official residence of the medical officer of health be in Preston, or such other place as the County Council may determine. 4. That the Committee be authorised to advertise for candidates, to examine all applications and testimonials, and to recommend to the Council the candidate in their opinion most eligible for the office.

"Applications have been made to the Local Government Board in accordance with the resolutions passed at the last meeting of the County Council for provisional orders constituting two joint committees, one representing all the administrative counties through or by which the rivers Irwell and Mersey, or any tributaries thereof, pass, and the other representing all the administrative counties through or by which the river Ribble, or any tributaries thereof, pass, and to confer upon such committees all the powers of a sanitary authority under the Rivers Pollution Prevention Act, 1876, and the Committee are now in correspondence with the Local Government Board on the subject.

LAY INTERESTS IN PUBLIC HEALTH.

FROM time to time it has been forcibly pointed out by writers on hygiene that the future of sanitary progress depends to a great extent upon the goodwill and co-operation of the people at large. Striking at the root of the matter, not a few reformers base their hopes upon "the education of the masses as the real groundwork of national health." Nor can it be doubtful that a higher standard of general intelligence would infinitely increase the chances of a really popular recognition of the laws that govern life in civilised communities. It is by transgression against those laws that man creates in a great measure the scourges for his own back. Nor is it less true that the vast amount of injury caused by preventible disease is hardly likely to be materially

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affected until the people consent to work hand-in-hand with the authorities for its removal. Otherwise, medical men may theorise and Parliaments legislate into a far-off futurity with results of an equally vain and unsatisfactory nature. Popular support, however, if intelligent and sympathetic, would soon put a different complexion upon the state of affairs. To take an instance. During the late scarlet fever epidemic in Birmingham, the inhabitants cordially helped the sanitary authorities in their difficult task of stamping out or, at any rate, of checking the spread of the disease. With this object in view, early information of infection was given to the medical officer, and parents seemed anxious, in the greater number of cases, to get their children into the special fever hospitals as quickly as possible. Considering the crowded nature of the affected area and the extent of the epidemic, any widespread feeling of hostility would have placed insurmountable difficulties in the way of dealing with the outbreak.

It may be mentioned, by the way, that while the strain on the health department was at its greatest, a well-known medical man of the town wrote to the public papers, attributing the spread of the fever to the distribution of the drains, and calling in question the relative value of the preventive measures adopted by the Corporation. The incident is instructive, although the fact is painfully familiar that members of the medical profession are often numbered among the most active enemies of scientific progress.

In the case of compulsory notification, any determined opposition on the part of the people, or of practitioners, would practically defeat the carrying out of that measure. Disaffection will soon find its loophole, especially in an Act of Parliament, through which, according to the old saying, a coach and four can usually be driven; so that the value—nay, more, the necessity—of united action in the great common cause of sanitation is abundantly evident.

In the opinion of many competent students of social problems, as already stated, popular opinion will depend ultimately on the education of the masses. In what way the special knowledge may best be imparted remains an open question. Much may be effected in the course of actual education at the schools themselves, and there can be no doubt whatever that the medical profession has a large share of responsibility in the matter. In them we find a body of specially trained men, visiting from day to day the dwellings of persons of every rank in society, from cottage to palace. No other profession enjoys such widespread opportunities of influencing and educating the community on matters that are of universal interest and importance to the individual. For the proper discharge of such duties the student should be thoroughly grounded in the principles of sanitary science. It is of far greater importance to him and to his patients that he should know something practical about drains and ventilation than that he should be able to recite the minute branches of an obscure artery.

Much may be looked for, again, in the spread of popular education in health matters from what is often called the "fourth estate," that powerful lever of modern times; as one of the most philosophical of living writers on the subject, Dr. Wilson, said, in his address on the Policy of Prevention, delivered at the eleventh annual Congress of the Sanitary Institute: "If it be objected that such knowledge (*i.e.* sanitary) cannot be imparted in schools, it may, at all events be conveyed through the public press or from the pulpit; or is it too much to hope that the wordy warfare concerning the origin of human life may speedily give place to united efforts to prevent its appalling waste?"

THE ELECTION OF A SANITARY INSPECTOR.

Our attention has been called to certain proceedings of the Gloucester City Council, at a meeting recently held for the purpose of electing an inspector of nuisances to take the place of an officer who had resigned. The following particulars are taken from a full report appearing in the *Gloucester Journal* of February 22:—

The resignation of the present inspector was read and accepted, to take effect on March 25 next. The resignation was dated January 22, and addressed to the Sanitary Committee. The town clerk then reported that he had given formal notice of the intention of the council to appoint another inspector, at a salary of £104 a year. Two members suggested that the appointment should be referred to the Sanitary Committee, one complaining that it was forced forward with indecent haste.

Mr. Sydney Turner then moved that Mr. John Owner, a local man, be appointed to the office at a salary of £104 a year, on condition of giving his whole time to the work. A heated discussion ensued. Some members proposed that the testimonials of several other candidates should be read; others desired that Mr. Owner should produce testimonials as to his character and competency, which he had promised to bring forward in a circular he had sent round to the members; while others urged that this was unnecessary.

"Mr. Powell said he was going to vote for Owner, because everything was in proper order, and because he thought him a thorough practical man. If the Liberals were going to make an appointment, it was always unjust, unfair, un-English, and political in the sight of Alderman Coren. Those on his side of the table had as much right to their opinions as Alderman Coren and his friends, and when the latter made an appointment, the former did not raise such a storm in a teapot as Alderman Coren had just raised."

"Mr. Bruton, after regretting that Alderman Mott's suggestion had not been adopted, said he regretted to have to introduce a personal matter. *He would say at the outset that he fully recognized the right of the majority to select one of their own political friends.* Unfortunately everything in Gloucester had a political tinge." He (Mr. Bruton) then went on to complain that Mr. Owner, the candidate proposed for election, had been associated with a political agent in the town in inducing certain persons, by promises of money and beer, to sign a petition alleging that he (Mr. Bruton) had been guilty of bribery.

After further discussion, Mr. Clutterbuck proposed the election of a Mr. Niblett, another local candidate, described as an "architect and builder." A division was then called. Eighteen votes were given for Mr. Owner and nine for Mr. Niblett. Four members abstained from voting, declining to take any part in proceedings that appeared to them to be improper.

It was then proposed and carried that Mr. Owner be appointed examining officer and inspector under the Canal Boat Acts, at a salary of £10 a year. None of the candidates were called before the council, and none of their applications or their accompanying testimonials read. Several protests on this subject

were made without effect. The Local Government Board will, no doubt, require proof that the elected candidate is a fit and proper person for the office, but no such proof was laid before the council—in fact, the whole question was fought out purely on party lines.

The speeches quoted clearly show this, and they also show that it is a recognized practice in Gloucester that the party for the time being in power should fill up municipal appointments falling vacant, from the ranks of their friends and supporters. It has been repeatedly urged by and on behalf of sanitary inspectors that more stringent rules than those now existing should be framed to secure for qualified men a fair chance of election on their merits. It would be difficult to submit stronger proof of the justice of this plea than that afforded by the proceedings under notice. Gloucester is not one of the smaller urban or rural authorities to which practices of this nature have been sometimes supposed to be confined, but an important city, with a population of 40,000 or upwards.

THE DRAINAGE OF WEST HAM.—The Local Government Board have sanctioned a scheme for a large extension of the outfall works, pumping station, and main drainage of the borough of West Ham, as designed by the borough engineer, Mr. Lewis Angell, at a cost of nearly £100,000. The original system of drainage was laid out by Sir Robert Rawlinson in 1860, also at a cost of nearly £100,000, and much added to since; but so great has been the development of the district, which immediately adjoins the eastern boundary of the metropolis, that it has been found necessary to practically reconstruct the sewerage system.

INSPECTION OF BUTCHERS' MEAT.—The International Congress of Veterinary Medicine has decided that the inspection of butchers' meat shall be compulsory throughout France. All private slaughter-houses are to be abolished and replaced by public ones, which will supply several adjoining communities. No foreign meat is to be introduced without previous examination by a veterinary expert. All meat is to be marked before it is taken from the slaughter-houses. The inspection of meat in the army is to be made by military or civil veterinary experts.

INFLUENZA IN DUBLIN.—The death-rate of Dublin in January last was very high, and greatly exceeded the average for that month in the previous ten years. The excess was probably altogether due to the influenza epidemic, which appeared in Dublin in December and increased in intensity in January. In the latter month there were only eighteen deaths directly attributable to the malady, but indirectly it caused a large mortality from pneumonia, bronchitis, whooping-cough, and other diseases. Excluding influenza, the rate from the principal zymotic diseases was below the average for the first month of the year.

NATIONAL HEALTH SOCIETY.—The National Health Society, 44, Berners Street, W., is now arranging pleasant and instructive evenings for shop girls, the members of the Girls' Friendly Society, and other young women. The subjects taken up by the lady teachers of the Society are: Household management; how to get a healthy home; a working-woman's day, which includes lighting the fire, dusting, sweeping, &c.; breakfast, what to have and how to cook it; laying the dinner table; how and what to buy for dinner; how to cook it; washing the children; dainties for tea; how to get up collars and shirts; mending, patching, &c. All these useful subjects. and many others are taken in turn and dealt with in a practical interesting way. The National Health Society's lectures certainly deserve the support of the fathers, brothers, and husbands of the community at large, since by its teachings many homes are rendered more comfortable, clean, and healthy.

NOTES OF THE MONTH.

THE DANGERS OF ELECTRIC LIGHTING.

WE learn that another example of the dangers of electric lighting, in addition to those, chiefly American, cited in our article bearing the above title, published in our last month's issue, has occurred in Glasgow, on the premises of Messrs. W. Sorley, jewellers and silversmiths, of Buchanan and Argyll Streets. The fire was extinguished before it had taken any hold upon the building, and the damage done was comparatively small, but the occurrence is worth noting, as apparently showing some of the dangers we have pointed out as attending the use of electric light. The premises are lit by electricity, and the origin of the outbreak is believed to have been an insufficiently insulated wire coming in contact with and melting one of the gas-pipes, the ignition of the gas following. In helping to extinguish the fire one of the firemen stepped on a metal grating in the pavement which had become charged with electricity, and received a shock which threw him down. A policeman in attendance also received a severe shock through touching or stepping on some of the pipes or ironwork of the building.

LEAD-POISONING FROM SERVICE-PIPES.

DR. ALFRED SWANN, Medical Officer of Health, Batley, writing to a contemporary, says he has been struck and even shocked at the dogmatic tone assumed by some chemists when speaking of the means for preventing this scourge by chemically treating the water either at its source or in the storage reservoirs. He regards all such attempts as worse than useless, because they lull the public for a time into a fancied security, from which it awakes to find matters as bad or worse than they were before anything was done. Presuming the water to be free from lead before entering the service-pipe, he believes that nothing short of supplying it through service piping containing no lead will be found of any permanent use. The difficulty at the present time, he adds, is to know how to cope with this great question. To call upon property-owners to substitute iron service-pipes for the lead ones, would be a serious and heavy matter for many of them, and to call upon local authorities to do the same thing would be certain to meet with great opposition. What Dr. Swann would suggest to meet the present emergency is, that in each street, in an accessible position, there be placed an iron stand with tap connected to the water-main by iron piping, to which the inhabitants could come to draw their water for drinking and cooking purposes.

INSPECTORS AND THE NOTIFICATION OF INFECTIOUS DISEASE ACT.

IN considering, in a recent report, the desirability of appointing special officers to assist in carrying out the Infectious Disease (Notification) Act, 1889, Dr. John F. J. Sykes, Medical Officer of Health to the Vestry of St. Pancras, remarks that at first sight such a course would appear to possess the advantage of preventing the spread of infectious disease; but upon closer examination, it will be seen that it would lead to complicated results.

"In such a suggestion," observes Dr. Sykes, "it is taken for granted that sanitary inspectors are closely and dangerously exposed to infections. Is this so? Sanitary inspectors do not require to see patients, or

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to come in any way into contact with them, nor is it even necessary for them to enter the sick room; they are neither nurses nor medical attendants. They even run less risk of contracting the disease than the other inmates of the house, their stay being shorter; and for the same reason they are less likely than other persons resident in the house to carry infection. This minimum of risk is further reduced to a vanishing point by their walking in the open air from one house to another, the cases reported each morning being situated considerable distances apart.

"On the other hand—assuming as a *hypothesis* that risk is incurred—it follows that if an inspector convey *one* infectious disease to an uninfected house, he will also convey *all* infectious diseases in a similar manner; and a special inspector, in visiting a house in which there is a case of one kind of infectious disease, will convey half-a-dozen other infectious diseases into the house. It logically follows, therefore, that it will be necessary to appoint a special inspector for each form of infectious disease. Sanitary inspectors, from past experience, appear more liable than others to contract contagious forms of sore throat and of diarrhœa in inspecting foul drains and other sources of foul emanations; therefore, further special inspectors for this purpose also would be required, if it were assumed that they could convey the germs of infection from house to house."

Dr. Sykes considers that the appointment of special officers would introduce further classes of special inspectors, to the multiplication of which objection has been already raised, although if, by the sub-division of labour, economy of time and better results were to follow, no exception could be taken to such a course. But special inspectors might object to undertake any duties beyond those for which they were engaged, and it would even be necessary, on this separate system, to forbid them to do so. They would consequently be unavailable for any other purposes.

BURIAL REFORM *v.* CREMATION.

THE Burial Reform Association has done yeoman's work in drawing attention, among other things, to the over-crowding of cemeteries, and to the evils of burying in brick vaults and imperishable coffins. Quicker decomposition is advocated by the removal of artificial hindrances to that necessary process. From a logical point of view, members of the Association can hardly object to cremation, which carries their theories a step further and reduces the time taken up by decomposition to a mere fraction. In other words, if earth to earth burial be good from a sanitary point of view, cremation must be infinitely better. The Cremation Society of England asks its supporters to subscribe to the following declaration: "We disapprove of the present custom of burying the dead, and desire to substitute some mode which shall rapidly resolve the body into its component elements by a process which cannot offend the living, and shall render the remains absolutely innocuous."

CREWKERNE POLLUTION CASE.

THE injunction lately granted—at the instance of a gentleman living on the banks—against the local authorities of the Chard district to cease the pollution of the river, is a valuable indication for the future. Abundant testimony was forthcoming as to the filthy state of the river; which, indeed, was practically admitted by the defendants. The points relied on by the counsel for the latter were chiefly: first, that the river was no worse than before sewage works were erected; and, secondly, that long usage had established a prescriptive right to discharge the matter complained of into its channel. Bottles of water taken from the stream, "black as ink," were effectively put in evidence. The judge asked one old Somerset yokel how Crewkerne houses were formerly drained. The reply, "Vats, your Honour"—which, being interpreted, means "vaults," or otherwise cesspools—at once upset the theory of defence that an equal amount of sewage went into the stream prior to the drainage scheme. It is to be hoped that this case will dispose of any future claims to vested rights for poisoning streams.

THE PEABODY DONATION FUND.

THE twenty-fifth annual report for the year 1889 of the trustees of the Peabody Donation Fund, which has just been issued, shows that the nett gain of the year from rents and interest has been £29,607. According to the balance-sheet appended, the total of the four sums given or bequeathed by the late generous donor amounted to £500,000, and when to this has been added the proceeds accruing from rent and interest, the fund for which the trustees are accountable has reached a sum of £994,790. During the process of construction the trustees found it necessary to borrow from the Public Works Loan Commissioners and others a sum of £390,000, but having paid off £148,666 of this, their indebtedness on this account is reduced to £241,333. The expenditure during the past year on land and buildings amounted to £1,561, making, with previous disbursements on the same account, a total outlay by means of the fund of £1,233,845. Under its provisions the trustees have succeeded in providing for the artisan and labouring poor of London 11,275 rooms, besides bath-rooms, laundries, and wash-houses, which are occupied by 20,374 persons. These rooms comprise 5,071 separate occupations, let under the following arrangement of 76 residential dwellings of four rooms, 1,790 of three rooms, 2,396 of two rooms, and 809 of one room. The average rent of each single room is shown to be 2s. 2d. per week, and of each dwelling 4s. 9d. The lowest rent-charge is made in Shadwell, and the highest in Pimlico, Marylebone, and Clerkenwell. A table appended, showing the class and vocations of the people accepted as occupying tenants, testifies to the exactitude with which the fund has been administered. Labourers to the number of 650 are the most numerous occupants. Porters and needlewomen amount respectively to 539 and 304, while charwomen and carmen are returned as numbering 292 and 249. The remainder of the occupants are absolutely *bonâ fide* members of the labouring class.

THE EXTENSION OF PUBLIC ANALYSIS.

THE paper read by Mr. C. E. Cassal at the Congress of the Sanitary Institute at Worcester last September is instructive. The author, as a public analyst of experience, knows the practical working of the Adulteration Acts; and his testimony to the prevalence of adulteration in many articles of common use should not be disregarded. The fact that in all parts of the country a considerable proportion of the samples submitted to analysis are found not to be genuine is significant, but its force is increased when we see that in many populous districts samples are hardly ever taken, and that consequently fraudulent trades-

men run very slight risk of detection. Many local authorities have been content to appoint analysts at small salaries, without providing for any systematic investigation of the quality of the goods sold within their districts, and the analysts are consequently left idle without anything to analyse. This should not be the case. We notice that Mr. Cassal's statistics are those for the year 1887, and we hope that since then there has been an improvement, and that last year no county could be found in which only one sample was taken, and that found to be adulterated. Besides the shortcomings in administration to which we have alluded, Mr. Cassal also shows that the Act of 1876 now in force is defective inasmuch as its scope is too limited. The public may be cheated and poisoned by other articles besides food and drugs, and an extension of the penal clauses under which vendors of, at any rate, goods which contain ingredients deleterious to health, might be punished, if they dispose of them without informing the purchasers of their true nature, seems desirable. We do not altogether agree, however, that the functions of a medical officer of health and a public analyst are necessarily so divergent that the same individual should never hold both offices. Mr. Cassal's sense of the importance of his profession is natural. But neither analyst nor medical officer is always fully occupied, and the union of the two offices may sometimes secure adequate occupation and remuneration for a useful public official.

INFLUENZA IN PROVINCIAL TOWNS.

According to information with which we have been favoured by many medical officers of health, it appears that the prevalence of influenza became general almost throughout the country during February, and with it a marked rise in the death-rate has taken place. The effects of the epidemic are shown in the rates of mortality in most of the large provincial towns in precisely the same way as in London, where influenza was so prevalent during January; the death-rates in some of these towns last month showing an increase of more than 50 per cent. upon those recorded in the first month of the year. Though comparatively few deaths appear to be directly referred to influenza, the mortality from diseases of the respiratory organs, as was the case in London, show a very marked excess in all the towns in which the epidemic is prevalent. It is noteworthy that in January, when influenza was epidemic in London, the metropolitan death-rate was as high as 28·1 per 1,000, and exceeded the rate recorded in any recent year; while in twenty-seven of the largest provincial towns, in but few of which influenza was then prevalent, the rate did not exceed 23·7 per 1,000, and almost corresponded with the average. In February, however, when the epidemic had considerably declined in London, the death-rate fell to 21·2 per 1,000, while in the provincial towns, in which influenza had then become generally prevalent, the rate rose to 27·7, and considerably exceeded that recorded in the corresponding period of any year for which returns are available. Among the provincial towns in which influenza is reported to be specially prevalent are Basford, Blackburn, Bolton, Bradford, Burton-on-Trent, Cambridge, Darlington, Derby, Dover, Exeter, Gorton, Heywood, Jarrow, Keighley, Kidderminster, Lancaster, Leicester, Macclesfield, Manchester, Norwich, Nottingham, Oldham, Preston, Rochdale, Salford, Sheffield, Sunderland, Wallasey, West Ham, Weymouth, Wigan, and Wolverhampton. Dr. Boobbyer, the Medical Officer of Health of Nottingham, states that the epidemic commenced in that town at the end of December, and reached its maximum about the third week in February; and from some interesting statistics in his letter it appears that the mortality from bronchitis and pneumonia, which but slightly exceeded the average in January, rapidly rose during February, and was more than double the average for the corresponding month of the five preceding years. The mortality from all causes in Nottingham exceeded by more than 35 per cent. that recorded in January; and in some other large provincial towns, including Bolton, Bradford, Leeds, Sheffield, and Wolverhampton, a still larger increase in the death-rate was recorded.

THE PUBLIC HEALTH

During February 1890.

The mean temperature during the month of February at the Royal Observatory, Greenwich, was 37°·5, and was 1°·0 below the average temperature in one hundred years. An excess of temperature prevailed on only six days during the month, while on twenty-two days it was below the average. The mildest day of the month was the 1st, when the mean was 45°·0, and showed an excess of 4°·5; the coldest day was the 28th, when the mean was only 32°·3, and was 7°·9 below the average. Rain was measured on nine days during the month under notice, to the aggregate amount of one inch, which was half an inch below the average amount in the corresponding periods of sixty-one years. During the first two months of the current year the rainfall has amounted to 3·1 inches, which was slightly below the average. The sun was above the horizon during 277·9 hours during February, and 62·8 hours of bright sunshine were recorded at Greenwich, which, with one exception, exceeded the amount registered in the corresponding month of any year on record. The wind was easterly almost throughout the month.

In the twenty-eight large English towns dealt with by the Registrar-General in his Weekly Returns, which have an estimated population of nearly nine and three quarter millions of persons, 23,669 births and 18,477 deaths were registered during the four weeks ending Saturday, March 1. The annual birth-rate, which had been 28·3 and 32·7 per 1,000 in the two preceding months, declined again to 31·8 during the month under notice, and was considerably below the average rate in the corresponding periods of the eight preceding years, 1882–89. In London the birth-rate last month was 31·7 per 1,000, while it averaged 31·8 in the twenty-seven provincial towns, among which it ranged from 24·9 in Huddersfield, 25·9 in Bradford, and 26·2 in Nottingham, to 39·0 in Portsmouth, 39·1 in Cardiff, 39·4 in Norwich, and 40·3 in Newcastle-upon-Tyne.

The annual death-rate in the twenty-eight towns, which had increased in the five preceding months from 17·0 to 25·7 per 1,000, declined again to 24·8 during the month under notice, but considerably exceeded the rate recorded in the corresponding period of any year since 1882. The lowest rate of mortality in these towns last month was 19·6 in Brighton. The rates in the other towns, ranged in order from the lowest, were as follow:—Leicester, 20·6; Cardiff, 20·6; Derby, 20·9; London, 21·2; Birkenhead, 21·8; Nottingham, 22·5; Hull, 22·7; Huddersfield, 24·3; Portsmouth, 24·8; Salford, 26·4; Sunderland, 26·4; Birmingham, 26·7; Plymouth, 27·0; Halifax, 27·0; Norwich, 27·6; Bradford, 27·7; Newcastle-upon-Tyne, 27·9; Blackburn, 28·3; Liverpool, 29·4; Sheffield, 29·4; Oldham, 30 0; Leeds, 30·4; Bristol, 31·3; Wolverhampton, 32·1; Bolton, 32·2; Preston, 33·8; and the highest rate during the month, 36·2 in Manchester. While the death-rate in London last month, as before stated, was only 21·2 per 1,000, it

averaged 27·7 in the twenty-seven provincial towns. This marked excess in the mortality in the provincial towns was due in a great measure to the fatal prevalence of influenza. The 18,477 deaths from all causes in the twenty-eight towns during the four weeks of February included 1,515 which were referred to the principal zymotic diseases; of these, 693 resulted from whooping-cough, 198 from scarlet fever, 191 from measles, 190 from diphtheria, 129 from diarrhœa, 113 from "fever" (principally enteric), and 1 from small-pox. These 1,515 deaths were equal to an annual rate of 2·0 per 1,000, which was below that in the corresponding period of any year on record. The death-rate in London last month from the principal zymotic diseases was equal to 2·1 per 1,000, while in the twenty-seven provincial towns it averaged 2·0, and ranged from 0·5 in Birkenhead and in Leicester, and 0·7 in Norwich and in Cardiff, to 3·3 in Bristol, 3·5 in Liverpool, 3·6 in Salford, and 3·8 in Bolton.

Whooping-cough was the most fatal zymotic disease in the twenty-eight towns during the month under notice. The rate of mortality from this disease, which had increased from 0·28 to 0·84 per 1,000 in the four preceding months, further rose to 0·93 during February, but only slightly exceeded the average rate in the corresponding periods of the eight preceding years, 1882–89. In London the death-rate from whooping-cough was as high as 1·20 per 1,000, while in the twenty-seven provincial towns it averaged only 0·71, and was highest in Liverpool, Salford, Brighton, Bolton, and Bristol. In the last-mentioned city this disease has been severely epidemic during the last three months. The death-rate from scarlet fever, which had declined from 0·41 to 0·29 per 1,000 in the four preceding months, further fell to 0·27 during February, and was considerably below the average rate in the corresponding periods of the eight preceding years. In London the rate of mortality from scarlet fever was only 0·18 per 1,000, while it averaged 0·34 in the twenty-seven provincial towns, among which this disease showed the highest proportional fatality in Liverpool and Sheffield. The death-rate from measles, which had been 0·40 and 0·30 per 1,000 in the two preceding months, further declined to 0·26 during the month under notice, and was less than half the average rate in the corresponding periods of recent years. In London the measles death-rate did not exceed 0·18 per 1,000, while in the twenty-seven provincial towns it averaged 0·32, and was highest in Birmingham and Liverpool. The rate of mortality from diphtheria, which had been 0·31 and 0·25 per 1,000 in the two preceding months, was again 0·25 during February, and, with one exception, exceeded that recorded in the corresponding period of any of the eight preceding years. In London the death-rate from diphtheria was as high as 0·34 per 1,000, while it averaged only 0·19 in the twenty-seven provincial towns, among which this disease was proportionally most prevalent in Manchester and Salford. The death-rate from different forms of "fever" (including typhus, typhoid, and simple and ill-defined forms of fever), which had declined from 0·30 to 0·19 per 1,000 in the four preceding months, further fell to 0·15 during the month under notice, and was considerably below the average in the corresponding periods of recent years. In London the rate of mortality from "fever" was only 0·09 per 1,000, while it averaged 0·20 in the twenty-seven provincial towns, among which this disease showed the highest proportional fatality in Sunderland. The rate of mortality from diarrhœa was equal to 0·17 per 1,000, and was below the average in the corresponding months of recent years. One death resulted from small-pox in London during February, but not one in any of the twenty-seven provincial towns; and 5 small-pox patients were under treatment in the Metropolitan Asylum Hospitals at the end of February, 3 of whom had been admitted during the month. These hospitals contained 1,172 scarlet fever patients on the same date, against 1,569, 1,541, and 1,290 at the end of the three preceding months; the weekly admissions during February averaged 72, against 157, 123, 122, and 86 in the four preceding months.

The rate of infant mortality in the twenty-eight towns, measured by the proportion of deaths under one year of age to registered births, was equal to 153 per 1,000 last month, and exceeded that recorded in the corresponding period of any year since 1882. In London the rate of infant mortality did not exceed 138 per 1,000, while it averaged 165 in the twenty-seven provincial towns, and ranged from 105 in Newcastle-upon-Tyne, 111 in Brighton, 112 in Portsmouth, and 113 in Derby, to 198 in Wolverhampton, 231 in Preston, 232 in Halifax, and 233 in Huddersfield.

The death-rate from diseases of the respiratory organs, judged by the metropolitan returns, showed a marked decline from the high rate recorded in January, and was below the average. The weekly number of deaths referred to these diseases in London averaged 467, and the annual death-rate was equal to 5·5 per 1,000.

The causes of 417 of the 18,477 deaths in the twenty-eight towns during the four weeks of February were not certified, either by registered medical practitioners or by coroners. These uncertified deaths were equal to 2·3 per cent. of the total deaths, which exceeded the average proportions in recent months. In London the proportion of uncertified deaths was just under 1 per cent., while it averaged 3·1 in the twenty-seven provincial towns. The causes of all the deaths during the month in Plymouth and in Derby were duly certified, and only two were uncertified in Portsmouth, in Norwich, and in Birkenhead; the highest proportions of uncertified deaths were recorded in Salford, Huddersfield, Halifax, Sheffield, and Liverpool.

Among the population living in the outer ring of suburban districts around London, estimated at upwards of one and a quarter million of persons, the annual death-rate from all causes during February was 18·1 per 1,000, and almost corresponded with the average rate in the corresponding periods of the eight preceding years. During the four weeks ending March 1, 103 fatal cases of whooping-cough, 32 of measles, 26 of diphtheria, 13 of diarrhœa, 7 of scarlet fever, 7 of "fever" (principally enteric), and not one of small-pox, were registered in the outer ring; in all, 188 deaths resulted from these principal zymotic diseases, equal to an annual rate of 1·8 per 1,000, which was below the average in the corresponding periods of recent years. Compared with the preceding month, the fatality of scarlet fever and of "fever" showed a decline, while that of whooping-cough showed an increase. Of the 103 deaths from whooping-cough, 25 occurred in West Ham, 12 in Stratford, 9 in Croydon, 7 in Tottenham, and 5 in Richmond sub-districts. The 32 fatal cases of measles included 7 in Leyton, 6 in West Ham, and 4 in Croydon; and of the 26 deaths from diphtheria, 3 were recorded in West Ham, 3 in Acton, 2 in Brentford, and 2 in Uxbridge sub-districts.

DR. LINNINGTON ASH, having recently been made a Justice of the Peace for the county of Devon, intends to act as an ex-officio guardian, and consequently has resigned the offices of Medical Officer of Holsworthy Rural Sanitary District and Medical Officer and Public Vaccinator of Nos. 4 and 5 Districts of the Union, which he has held for 30 years. He has been succeeded in these offices by Dr. Gray.

A NEW disinfecting apparatus has been set up in Birmingham. This was necessary owing to the greater amount of work occasioned by the scarlet fever epidemic during the last quarter of 1889. No less than 3,113 articles were disinfected, this number being 700 in excess of the number in the corresponding quarter of 1888. The apparatus of Mr. Washington Lyon is the one introduced, and it has the advantages over the old arrangement that it accomplishes more work, and furnishes a more steady temperature and a more penetrating action, which latter is a great desideratum in the disinfection of such articles as beds and pillows.

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Table showing Sickness and Mortality in 84 Sanitary Districts of England and Scotland during the Month of February 1890.

Sanitary Districts.	Estimated Population middle of 1890.	Small-pox.		Scarlet Fever.		Diphtheria.		Typhus Fever.		Enteric Fever.		Cholera.		Relapsing Fever.		Puerperal Fever.		Totals of Preceding Columns.		Annual Rate per 1,000 Persons Living.		Deaths from other Zymotic Diseases.				Deaths from all causes.	Death-rate from all Causes per 1,000 Persons Living.
		Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Ill-defined Fever.	Measles.	Whooping-cough.	Diarrhœa.		
Aberdeen	123,600	—	—	14	—	6	—	—	—	9	2	—	—	—	1	—	—	29	3	3·1	0·3	—	4	5	2	260	27·4
Accrington	40,000	—	—	4	2	1	—	—	—	—	—	—	—	—	—	—	—	5	2	1·6	0·7	—	—	—	—	56	18·3
Alverstoke	18,100	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	1	—	0·7	—	—	—	8	—	38	27·4
Ashton-under-Lyne	40,488	—	—	2	1	—	—	—	—	2	—	—	—	—	—	—	—	4	1	1·3	0·3	—	—	—	—	101	32·5
Barrow-in-Furness	50,000	—	—	24	1	4	1	—	—	4	—	—	—	—	—	—	—	32	2	8·3	0·5	—	—	13	—	99	25·8
Basford	51,000	—	—	22	1	—	1	—	—	6	4	—	—	—	—	1	—	29	6	7·4	1·5	—	—	—	—	80	20·5
Bilston	23,000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	53	30·0
Birkenhead	105,090	—	—	26	1	—	—	—	—	3	—	—	—	—	—	—	—	29	1	3·6	0·1	1	1	3	—	153	19·0
Birmingham	461,865	—	—	190	18	14	1	—	—	22	3	—	—	—	—	2	—	228	22	6·4	0·6	22	15	6	—	911	25·7
Blackburn	125,081	—	—	42	4	—	—	—	—	10	4	—	—	—	—	—	—	52	8	5·4	0·8	1	4	3	—	267	27·8
Bolton	115,846	—	—	65	3	9	4	—	—	11	2	—	—	—	—	1	—	86	9	9·7	1·0	1	1	21	1	262	29·5
Bournemouth	36,300	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	57	20·5
Bradford	240,515	—	—	36	4	1	—	—	—	10	1	—	—	—	—	—	—	47	5	2·5	0·3	—	9	4	—	512	27·8
Burnley	95,000	—	—	38	2	2	1	—	—	4	—	—	—	—	—	—	—	44	3	6·0	0·4	—	—	7	—	146	20·0
Burton-on-Trent	48,473	—	—	7	2	3	—	—	—	1	—	—	—	—	—	—	—	11	2	3·0	0·5	—	—	—	—	89	23·9
Bury	61,000	—	—	1	—	2	—	—	—	2	—	—	—	—	—	—	—	5	—	0·9	0·0	—	—	1	2	127	21·7
Cambridge	41,070	—	—	1	—	—	—	—	—	1	—	—	—	—	—	—	—	2	—	0·6	—	1	—	11	1	73	23·2
Canterbury	21,704	—	—	1	—	1	—	—	—	1	—	—	—	—	—	—	—	3	—	1·8	—	—	—	—	—	37	22·2
Cardiff	117,012	—	—	18	—	1	—	—	—	4	—	—	—	—	—	1	—	24	—	2·7	—	—	—	5	1	185	20·6
Chatham	30,000	—	—	14	—	4	3	—	—	—	—	—	—	—	—	—	—	18	3	7·8	1·3	—	—	5	—	62	27·0
Cheltenham	47,200	—	—	24	—	3	—	—	—	1	—	—	—	—	—	—	—	28	—	7·7	—	—	—	—	—	84	23·2
Coventry	52,000	—	—	1	—	2	1	—	—	2	1	—	—	—	—	—	—	5	2	1·3	0·5	—	—	1	—	119	29·8
Darlington	39,000	—	—	12	1	—	—	—	—	9	—	—	—	—	—	—	—	21	1	7·0	0·3	—	2	—	—	55	18·4
Darwen	36,500	—	—	9	1	—	—	—	—	2	—	—	—	—	—	—	—	11	1	3·8	0·3	—	—	—	—	69	24·0
Derby	100,871	—	—	21	—	1	—	—	—	11	1	—	—	—	—	—	—	33	1	4·3	0·1	—	2	4	—	147	19·0
Devonport	50,000	—	—	25	2	1	—	—	—	1	1	—	—	—	—	—	—	27	3	7·0	0·8	—	—	2	—	127	33·1
Dewsbury	33,000	—	—	2	1	1	—	—	—	1	—	—	—	—	—	—	—	4	1	1·6	0·4	—	—	—	—	58	22·9
Dover	31,483	—	—	4	—	—	—	—	—	—	—	—	—	—	—	—	—	4	—	1·7	—	—	—	2	—	60	24·8
Dundee	166,027	—	—	14	—	13	6	1	2	12	1	—	—	—	—	—	—	40	9	3·1	0·7	—	2	30	3	373	29·3
Edinburgh	271,135	—	—	83	5	34	8	—	—	22	4	—	—	—	—	—	—	139	17	6·7	0·8	—	54	29	4	490	23·6
Exeter	39,000	—	—	10	1	—	—	—	—	13	2	—	—	—	—	—	—	23	3	7·7	1·0	—	1	3	—	97	32·4
Gillingham	26,000	—	—	11	—	1	—	—	—	—	—	—	—	—	—	—	—	12	—	6·0	—	—	—	3	—	36	18·0
Gorton	41,000	—	—	10	2	7	1	—	—	14	3	—	—	—	—	—	—	31	6	9·9	1·9	—	2	—	—	61	19·4
Great Yarmouth	50,272	—	—	1	—	2	—	—	—	17	1	—	—	—	—	—	—	20	1	5·2	0·3	—	—	—	—	75	19·4
Greenock	79,312	—	—	14	—	4	2	—	—	3	—	—	—	1	1	—	—	22	3	3·6	0·5	—	1	7	1	128	21·0
Grimsby	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Guildford	13,428	—	—	—	—	1	—	—	—	2	—	—	—	—	—	—	—	3	—	2·9	—	—	—	—	—	26	25·2
Halifax	82,500	—	—	27	1	8	2	—	—	1	—	—	—	—	—	1	—	37	3	5·8	0·5	—	—	—	—	142	22·4
Heston & Isleworth	25,288	—	—	1	—	1	1	—	—	2	—	—	—	—	—	—	—	4	1	2·1	0·5	—	—	2	—	31	16·0
Heywood	27,000	—	—	2	—	—	—	—	—	—	1	—	—	—	—	—	—	2	1	1·0	0·5	—	—	—	—	51	24·6
Huddersfield	94,253	—	—	9	—	—	1	—	—	4	3	—	—	—	—	—	—	13	4	1·8	0·6	—	—	2	1	176	24·3
Hull	213,833	—	—	47	3	7	1	—	—	3	2	—	—	—	—	2	—	59	6	3·6	0·4	—	1	13	—	363	22·1

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Sanitary Districts.	Estimated Population middle of 1890.	Small-pox.		Scarlet Fever.		Diphtheria.		Typhus Fever.		Enteric Fever.		Cholera.		Relapsing Fever.		Puerperal Fever.		Totals of Preceding Columns.		Annual Rate per 1,000 Persons Living.		Deaths from other Zymotic Diseases.				Deaths from all causes.	Death-rate from all Causes per 1,000 Persons Living.
		Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Ill-defined Fever.	Measles.	Whooping-cough.	Diarrhœa.		
Jarrow	32,000	—	—	—	—	4	1	—	—	2	—	—	—	—	—	—	—	6	1	2·4	0·4	—	—	3	—	60	24·4
Keighley	29,660	—	—	53	9	5	—	—	—	4	—	—	—	—	—	1	—	63	9	27·7	4·0	—	—	—	—	52	22·9
Kidderminster	26,000	—	—	5	—	—	—	—	—	1	—	—	—	—	—	—	—	6	—	3·0	—	—	2	—	—	54	27·1
Lancaster	28,301	—	—	5	—	—	—	—	—	—	—	—	—	—	—	1	1	6	1	2·8	0·5	—	—	2	—	53	24·4
Leamington	24,871	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	1·0	—	—	—	—	—	42	22·0
Leek	14,057	—	—	2	—	—	—	—	—	—	—	—	—	—	—	1	—	3	—	2·8	—	—	—	—	—	30	27·8
Leicester	154,344	—	—	33	2	4	1	—	—	11	1	—	—	—	—	3	1	51	5	4·3	0·4	—	—	1	1	244	20·6
Llanelly	23,559	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8	—	57	31·5
Macclesfield	37,514	—	—	2	—	—	—	—	—	1	1	—	—	—	—	—	—	3	1	1·0	0·3	—	1	5	—	97	33·7
Manchester	379,437	—	—	145	10	45	23	—	—	30	10	—	—	—	—	7	7	227	50	7·8	1·7	—	9	20	13	1,094	37·6
Norwich	95,352	—	—	6	—	5	1	—	—	2	1	—	—	—	—	—	—	13	2	1·8	0·3	—	1	—	—	200	27·3
Nottingham	230,000	—	—	83	2	1	1	—	—	21	7	—	—	—	—	—	—	105	10	6·0	0·6	—	2	7	7	390	22·1
Oldham	146,716	—	—	28	4	1	—	—	—	2	—	—	—	—	—	1	1	32	5	2·8	0·4	—	—	5	2	338	30·0
Portsmouth	142,952	—	—	53	—	10	2	—	—	14	3	—	—	—	—	—	—	77	5	7·0	0·5	—	—	5	1	286	26·1
Preston	105,163	—	—	23	2	7	3	—	—	3	1	—	—	—	—	1	—	34	6	4·2	0·7	—	—	—	4	223	27·6
Reading	62,271	—	—	—	—	4	—	—	—	1	1	—	—	—	—	—	—	5	1	1·0	0·2	—	—	1	3	100	20·9
Ripon	7,670	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	13	22·1
Rowley Regis	32,100	—	—	4	—	—	—	—	—	1	—	—	—	—	—	1	1	6	1	2·4	0·4	—	2	2	—	63	25·6
Rochdale	73,772	—	—	11	—	2	1	—	—	—	—	—	—	—	—	—	—	13	1	2·3	0·2	—	—	3	—	129	22·8
Rochester	25,000	—	—	18	1	1	—	—	—	—	—	—	—	—	—	1	—	20	1	10·4	0·5	—	—	—	—	50	26·1
Rotherham	36,807	—	—	15	—	2	—	—	—	—	—	—	—	—	—	—	—	17	—	6·0	0·0	—	—	1	—	75	26·5
Salford	242,509	—	—	93	8	41	17	—	—	30	5	—	—	—	—	—	—	164	30	8·8	1·6	—	3	21	3	492	26·4
Scarborough	36,200	—	—	4	—	2	—	—	—	2	—	—	—	—	—	—	—	8	—	2·9	—	—	—	—	—	51	18·4
Sheffield	332,837	—	—	229	22	26	5	2	1	22	6	—	—	—	—	1	2	280	36	11·0	1·4	—	3	4	9	742	29·1
Smethwick	34,500	—	—	18	—	2	1	—	—	2	—	—	—	—	—	—	—	22	1	8·3	0·4	—	—	—	—	57	21·5
Southport	(?)	—	—	6	1	6	1	—	—	—	—	—	—	—	—	—	—	12	2	?	?	—	—	2	—	70	?
Stafford	21,660	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	0·6	—	—	—	—	—	47	28·3
Stalybridge	28,184	—	—	11	1	2	1	—	—	5	1	—	—	—	—	—	—	18	3	8·3	1·4	—	—	1	1	73	33·8
Stockton-on-Tees	50,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Stretford	21,000	—	—	1	—	1	—	—	—	2	—	—	—	—	—	—	—	4	—	2·5	—	—	—	2	—	32	19·9
Sunderland	136,506	—	—	44	3	4	—	2	2	3	2	—	—	—	—	—	1	53	8	5·1	0·8	—	2	2	2	276	26·4
Todmorden	25,750	—	—	3	—	—	—	—	—	1	1	—	—	—	—	—	—	4	1	2·0	0·5	—	—	—	—	28	14·2
Tynemouth	49,538	1	—	13	1	1	1	—	—	3	—	—	—	—	—	—	—	18	2	4·7	0·5	—	—	—	—	93	24·5
Wakefield	33,676	—	—	2	1	—	—	—	—	2	1	—	—	—	—	—	—	4	2	1·5	0·8	—	2	—	—	85	32·9
Wallasey	33,500	—	—	13	1	4	—	—	—	2	1	—	—	—	—	—	—	19	2	7·4	0·8	—	—	—	—	41	15·9
Warrington	50,000	—	—	3	2	8	4	—	—	3	2	—	—	—	—	—	—	14	8	3·7	2·1	—	3	14	—	132	34·4
West Ham	180,000	—	—	28	3	14	4	—	—	5	3	—	—	—	—	—	—	47	10	3·4	0·7	—	6	31	4	287	20·8
Weymouth	14,134	—	—	1	—	1	—	—	—	—	—	—	—	—	—	—	—	2	—	1·8	—	—	—	1	—	28	25·8
Whitehaven	20,000	—	—	1	—	—	—	—	—	1	—	—	—	—	—	—	1	2	1	1·2	0·6	—	—	—	1	32	18·8
Widnes	30,000	—	—	14	—	—	—	—	—	5	—	—	—	—	—	—	—	19	—	8·3	—	—	—	—	—	60	26·1
Wigan	54,509	—	—	6	—	—	—	—	—	6	—	—	—	—	—	1	—	13	—	3·1	—	—	1	1	2	134	32·0
Willesden	57,158	—	—	20	—	10	—	—	—	—	—	—	—	—	—	—	—	30	—	6·8	—	—	—	3	—	90	20·5
Wolverhampton	83,407	—	—	20	—	1	1	—	—	1	1	—	—	—	—	—	—	22	2	3·4	0·3	—	—	5	4	195	30·5
York	75,327	—	—	7	—	1	—	—	—	3	1	—	—	—	—	—	—	11	1	1·9	0·2	—	1	1	1	117	20·3

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NOTIFICATION OF INFECTIOUS DISEASES

IN 84 URBAN SANITARY DISTRICTS.

THE table on pages 436 and 437 contains uniform statistics relating to sickness and mortality in 84 sanitary districts, including twenty-two of the largest English towns. The population of the towns for which we are enabled to publish complete statistics for the month of February is estimated at about six and a half millions of persons. The annual rate of mortality from all causes in these towns during the month under notice averaged 25·6 per 1,000 of their aggregate population, against 22·8 in the preceding month. The rates of mortality during February were considerably below the average in Accrington, Darlington, Gillingham, Heston and Isleworth, Scarborough, Todmorden, Wallasey, and Whitehaven; while they showed a marked excess in Ashton-under-Lyne, Devonport, Exeter, Macclesfield, Manchester, Stalybridge, Wakefield, Warrington, and Wigan. The high death-rates in nearly all these towns were more or less directly due to the severe prevalence of influenza. The death-rate from the eight infectious diseases dealt with in the table averaged 0·66 per 1,000 during February, against 0·75 in the month of January. No deaths from any of these infectious diseases were registered during last month in twenty-four of the 84 sanitary districts, whereas the rate of mortality from these diseases considerably exceeded the average in Basford, Chatham, Gorton, Keighley, Manchester, Salford, Sheffield, Stalybridge, and Warrington. Scarlet fever showed the highest proportional fatality in Birmingham, Keighley, and Sheffield; diphtheria in Bolton, Chatham, Dundee, Manchester, Salford, and Warrington; enteric fever in Basford and Gorton; measles in Birmingham and Edinburgh; and whooping-cough in Alverstoke, Barrow-in-Furness, Bolton, Cambridge, Chatham, Dundee, Llanelly, Warrington, and West Ham. No fewer than 7 deaths were referred to puerperal fever in Manchester. With reference to the notified cases of infectious disease in these sanitary districts during February, it appears that the proportion of the population reported to be suffering from one or other of the eight diseases specified in the accompanying table was equal to 5·2 per 1,000, against 5·5 in the first month of this year. No case of any of these diseases was reported during the month under notice in Bilston, Bournemouth, Llanelly, or Ripon; and while the proportion did not exceed 1·0 per 1.000 in Alverstoke, Bury, Cambridge, Heywood, Leamington, Macclesfield, Reading, and Stafford, it ranged upwards in the other districts to 8·3 in Barrow-in-Furness, in Smethwick, in Stalybridge, and in Widnes, 8·8 in Salford, 9·7 in Bolton, 9·9 in Gorton, 10·4 in Rochester, 11·0 in Sheffield, and 27·7 in Keighley. The very high rate in the last-mentioned district was due to the excessive prevalence of scarlet fever, no fewer than 53 cases having been notified during the month. Diphtheria was proportionally most prevalent in Bolton, Chatham, Edinburgh, Halifax, Keighley, Manchester, Salford, Sheffield, and Willesden; scarlet fever in Barrow-in-Furness, Chatham, Cheltenham, Devonport, Keighley, Rochdale, and Sheffield; and enteric fever in Blackburn, Bolton, Darlington, Exeter, Gorton, Great Yarmouth, Manchester, Nottingham, Portsmouth, and Salford. Seven cases of puerperal fever were notified during the month under notice in Manchester, 3 in Leicester, 2 in Birmingham, and 2 in Hull. One case of small-pox was notified in Tynemouth, but not one in any other of the sanitary districts.

AT the Eastbourne Police Court Dr. C. D. Sherrard, a local surgeon, has been fined 5s. for riding a bicycle at night without a light. Dr. Sherrard pleaded that the Highway Act (1878) did not mention "tricycles," but only "bicycles," but the magistrates informed him that the omission was rectified by the 85th clause of the Local Government Act, 1888.

SPECIAL REPORTS, ABSTRACTS, &c.

PROCEEDINGS OF THE SOCIETY OF MEDICAL OFFICERS OF HEALTH.

THE sessional meeting of the Society was held on Friday, January 10, at the Scottish Corporation Hall, Fleet Street. Present—Henry E. ARMSTRONG, President, in the chair; W. H. Corfield, T. Orme Dudfield, Vice-presidents; Drs. S. R. Lovett, Treasurer; J. F. J. Sykes, Secretary; A. Wynter Blyth, Editor; and Drs. Collingridge, Finlay, Bostock Hill, Newsholme, Shirley Murphy, Seaton, W. R. Smith, Willoughby, Woodford, Yarrow, and others.

ALTERATIONS IN THE BYE-LAWS.

It was moved by Mr. WYNTER BLYTH that the recommendation of the council be adopted, viz. (*a*) That medical men, holding registered qualifications in public health, sanitary science or state medicine, be eligible for election as members of the Society; (*b*) That not less than two-thirds of the council consist of acting medical officers of health. He stated that the time had come, in his opinion, to enlarge the Society, so as to concentrate into one body all medical men who were qualified to hold office as medical officers of health. Those who had obtained a diploma in public health, whether they were in or out of office, had the same aims and interests as the Society. It was requisite to present a strong united front, so as to be able effectively to influence prospective legislation and to protect the interests of the public health service; he had much pleasure in moving that the recommendation of the council be adopted.

Dr. CORFIELD seconded the proposition, and said that diplomates in public health are placed by the law on the same footing as medical officers of health of three years' standing. He saw nothing disadvantageous in the resolution proposed, but, on the contrary, thought that the diplomates and medical officers of health would be of mutual assistance.

Mr. SHIRLEY MURPHY considered that the issues were very considerable, for the question really was whether the Society should be an association of persons interested in public health, and cease to be a society of medical officers of health; for his part he was not prepared to give an opinion on the matter.

Dr. SEATON considered that the step was premature; it was entirely a different thing to be qualified to act as a medical officer of health, and to actually hold that position.

Dr. BOSTOCK HILL was of opinion that the step was one that tended to lower the whole status of the Society. The members had to look after their own interests. He desired the bye-law to remain as it now stood.

Dr. T. ORME DUDFIELD read extracts from a letter from Dr. Saunders, the former secretary, strongly deprecating any change in the existing bye-laws which would admit diplomates in public health. Dr. Dudfield considered that the motion should be withdrawn. He had a belief that it was not to the real interests of the Society to make it a general society, especially, as under the present rules, diplomates could be admitted as associates, and directly they became medical officers of health they were, as a matter of course, admitted to the full membership.

Dr. C. H. ALLFREY, an associate, stated that he was quite satisfied with his position in the Society; he held the Diploma in Public Health, and also belonged to the Public Health Medical Society.

Dr. W. R. SMITH stated that whilst he felt that there was a good deal in what had been urged as regards the exclusion of all but medical officers of health from the full membership of the Society, at the same time there was a strong feeling among those that held the public health diplomas that their position in the Society was unsatisfactory, and the time had come, in his opinion, for some change to be made.

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Dr. WOODFORDE moved that the whole matter be referred back for further consideration.

The PRESIDENT, as an examiner, had as much interest as anyone in seeing the diplomates in the Society. There were others qualified to be medical officers of health as well as those who had obtained the diploma, but on the whole he considered it better to leave things as they were; he concurred with Dr. Woodforde, that the whole matter had better be referred back to the council.

Dr. W. R. SMITH wished to point out that diplomates in public health had no special advantage in the Society, and he thought that they should be in some different position than at present.

On Dr. Woodforde's amendment being put to the vote it was carried *nem. con.*

The following resolutions, notices of which had been given by the Hon. Secretary, which also belonged to the same subject, were referred to the council for consideration:—

1. That of the twenty-four elective members of the council of the Society, twelve shall be medical officers of health acting within the metropolis, and twelve medical officers of health acting without the metropolis.
2. That not less than one-fourth of the elective members of the council shall hold registered qualifications in public health, sanitary science, or state medicine.
3. That one-fourth of the elective members of the council shall retire annually, and shall remain ineligible for re-election until the expiration of one year.

ELECTION AND NOMINATION OF MEMBERS AND ASSOCIATES.

The following gentlemen, having been duly nominated, were balloted for, and declared duly elected:—

As Members—Sir Charles Cameron, M.D., 15, Pembroke Road, Dublin, M.O.H. Dublin. David Duncan, M.B., D.P.H., Chester-le-Street, Durham, M.O.H. Chester-le-Street, R.S.D. T. B. Fairclough, L.R.C.P., Knowle Cottage, Mirfield, Yorkshire, M.O.H. Mirfield U.S.D. (by the Yorkshire Branch). John A. Fisher, L.R.C.P., Hawthorn House, Woolton Road, Garston, Lancashire, M.O.H. Garston and Allerton U.S.D. James Gibson, M.B., West Vale, Halifax, Yorkshire, M.O.H. Greetland U.S.D. (by the Yorkshire branch). J. Cookesley Heaven, L.R.C.P., 2, Queen Square, Bristol, M.O.H. Keynsham R.S.D. J. Wright Mason, M.B., 7, Wellington Terrace, Beverley Road, Hull, M.O.H. Kingston-upon-Hull Port and U.S.D. (by the North Western Branch). D. S. Skinner, M.D., Westbury House, Harlesden, N.W., M.O.H. Willesden U.S.D.

As Associates—William Gemmel, M.B., D.P.H. Fever Hospital, Belvidere, Glasgow. William H. Kempster, M.B., D.P.H., 255, Lavender Hill, S.W. Richard Lawston Roberts, M.D., D.P.H., Ruabon, North Wales.

The meeting was devoted to the discussion of a number of questions arising out of communications that had passed between the secretary on behalf of the council, as well as between individual members of the Society, and the Local Government Board, the Metropolitan Asylums Board, &c., chiefly in reference to

THE NOTIFICATION OF INFECTIOUS DISEASES.

The council had requested that the weekly returns of cases removed to the hospitals of the Asylums Board might not be discontinued, or that, at least, those thus removed might in form C be distinguished by a star. To this the managers declined to accede, chiefly on the ground that cases notified in one week were frequently not admitted until that following, in which their names, of course, would not appear, a reply which the council considered unsatisfactory, and to constitute a strong argument in favour of the resumption of the weekly returns of admissions formerly supplied to the medical officers of health.

Dr. DUDFIELD insisted strongly on the disadvantages accruing from the non-notification of many cases admitted without the knowledge of the medical officers of health, who were consequently unable to take the necessary steps for the disinfection of their dwellings or the removal of insanitary conditions to which the disease might have been due. Among such cases were those sent from the out-patient departments of hospitals, and those who entered of their own accord. He suggested that Dr. Seaton, as a member of the Asylums Board, might bring the matter forward at its next meeting, but Dr. Seaton thought that the number of such cases was inconsiderable, and especially of those who "walked in." Dr. Willoughby, however, assured him that during the last epidemic of small-pox, Dr. Collie had stated that such admissions were by no means of unfrequent occurrence.

Dr. SYKES, the hon. secretary, complained that Mr. Jebb, the clerk to the Asylums Board, had declined to explain how far the intervention of Sundays would affect "the 12 hours clause" (sect. 10), or to interpret it in any way. Mr. Jebb had, however, consented to lay before the managers, at their next meeting on January 30, his last letter relative to the continuance of the issue of form C.

Dr. FINDLAY then read a correspondence that had passed between the authorities of the Middlesex Hospital and the Local Government Board on the interpretation of that part of sect. 8 which exempts from the duty of notification "hospitals in which persons suffering from an infectious disease are received," in which the Local Government Board explained that "the exemption to notify and certify extended to the hospital so far as in-patients were concerned, but that infectious diseases when occurring among the out-patients, were to be certified to the medical officer of health of the district" in which they resided. He said that within the last few weeks several cases of diphtheria had been admitted as in-patients of Middlesex Hospital, the parents complaining of bad smells and sanitary defects in their houses, of which, in the absence of notification, there was no means of acquainting the local sanitary authority. In special hospitals cases were admitted mostly on the order of a medical practitioner who had already notified, but in general hospitals, all of which received diphtheria and enteric fever as well as erysipelas, the patient was often seen for the first time by the physician or other member of the medical staff.

Dr. YARROW referred to a correspondence which he had read at the last meeting, between himself as medical officer to the Holborn Union Workhouse Infirmary, and the vestry clerk of St. Leonard's, Shoreditch, in which district it was situated, relating to the notification of infectious cases admitted there, which the vestry clerk declared to be unnecessary, refusing to allow any payment for certificates. This infirmary, Dr. Yarrow maintained, was not a hospital for the reception of infectious diseases, and that he should be acting illegally if he received such cases, or on their occurring among the inmates, failed to notify them, and cause them to be immediately removed to the hospitals of the Asylums Board.

Dr. WILLOUGHBY was of opinion that the legal advisers of the Local Government Board, with an imperfect apprehension of the conduct of hospitals, had acted under the impression that infectious patients when within the walls of a hospital were no longer a source of danger to the community, forgetful of the fact that their illness might have been caused by insanitary conditions calling for the interference of the sanitary authority, and that in the case of diphtheria especially, disinfection, &c., of their homes would be necessary. He suggested that the resolution under discussion for the modification of the saving clause in sect. 3, should take the form of requiring "the notification of all cases of infectious disease admitted into any hospital whatever, except when such cases had been received on the certificate of a medical practitioner" who would have already notified the same. This would cover the case of general hospitals, raised by Dr. Findlay, as well as of those patients who might present themselves for admission to the hospitals of the Asylums Board.

This proposition was unanimously accepted, but Dr. CORFIELD, who had mentioned cases admitted to St. George's similar to Dr. Findlay's at Middlesex, would extend the duty of notification to cases occurring among

patients already in hospitals, since these might arise from sanitary defects in the hospital itself; and he maintained that these institutions should not be exempted from the control of the sanitary authority any more than private houses.

Dr. FINDLAY regretted the exclusion of such highly infectious and fatal diseases as measles and whooping-cough from the definition in the Act, for though, as Dr. Sykes observed, preventive measures might be of little or no avail, their notification would afford an opportunity for offering valuable advice with the aim of avoiding their extension.

Mr. BLYTH thought that the time was not far distant when tuberculosis, at least of the pulmonary kind, would be included, since by proper isolation and management the communication of the disease to other members of a family might be prevented.

Dr. DUDFIELD then stated that the School Board for London had requested the local sanitary authorities to report to them all cases of infectious disease occurring in families, the children of which attended any of their schools, and urged the necessity of giving such information to the responsible authorities of all public elementary schools. The principle was approved unanimously, but a long discussion ensued as to the best method of carrying it into effect.

Dr. SEATON thought that the simplest procedure would be to report to the School Board itself, but

Dr. WILLOUGHBY explained that the Board had no powers whatever in respect of voluntary schools, which in London accommodated 34 per cent. of the children, except to compel attendance, and that even as regarded the schools under the Board the divisional administration would involve a dangerous amount of delay. He said that in Canada and in some of the American States, the inspector of the sanitary authority on visiting a house where a case of infectious disease had been notified, ascertained what children in the house were attending schools, and instructed the teachers at such schools to refuse admittance to them until permission was given on certificate of the medical officer of health.

Dr. NEWSHOLME stated that the same practice, so far as could be carried out in the absence of compulsory notification, had been adopted in Brighton.

Drs. WILLOUGHBY and NEWSHOLME insisted that the only efficient and practicable course would be to report in each case direct to the head master of every school attended by children from infected houses, and this suggestion was ultimately accepted.

"THE PUBLIC HEALTH ACT OF ITALY, 1889."

At the meeting of February 14, Mr. ARMSTRONG, President, in the chair, Dr. EDWARD F. WILLOUGHBY read a paper on the "Public Health Act of Italy of 1889," which he described as a masterpiece of scientific legislation, a complete code in outline, the details of which could be from time to time filled in without necessitating the repeal of a single clause, thus strongly contrasting with our clumsy and imperfect efforts in the same direction, which had resulted in the creation of a chaos of conflicting authorities, statutes, and interests. Two ideas which our legislators had utterly failed to grasp pervaded the whole scheme.

First, that sanitation was not all that was implied in the care of the public health, but that the medical relief of the poor, the hygienic aspects of manufacturing and other industries, the health of the army, navy, and mercantile marine, the control of the sale of food, the purity of water supplies, diseases of domestic animals, the pollution of rivers, the practice of medicine and pharmacy, registration of births and deaths, &c., were co-ordinate and inter-dependent branches of one great department of social economy and legislation.

Secondly, that these matters demanded special knowledge, not only in the executive officers but also in the administrative, and that, consequently, the control of the public health could not safely be entrusted to boards elected by popular suffrage on other issues than that of special fitness; that is to say, the boards of health must be distinct from the local authorities, be composed of experts in the several branches of the science and art, and be, together with the higher sanitary officials, appointed by an independent authority, viz. the Crown, so as to be uninfluenced by the fear or favour of the ratepayers and the public, over whose interests they had to watch. This last principle was recognized in this country in the case of inspectors of mines, factories, shipping, &c., but with strange inconsistency ignored in that department which concerned not fractions of the community but the entire nation.

A noteworthy feature of the Act was the judicious balance of the relative claims of central control and of local self-government, with a corresponding distribution of the fiscal burdens.

While the administration of the public health in the widest meaning of the word devolved on the Ministry of the Interior, the prefects of the provinces, and the syndics of towns and communes, the minister and the prefects respectively were advised by a superior and provincial councils appointed by the Crown, composed of specially qualified physicians, engineers, chemists, pharmaceutists, veterinarians, jurists, and members conversant with administrative business; the medical and engineering members varying in number with the population of the provinces, and each of the other professions having but a single representative. The heads for the time being of the medical services of the army, navy, and the mercantile marine, the agricultural department and statistical office, with a principal law officer of the crown, were *ex-officio* members of the superior council. The provincial medical officers of health were appointed by the Crown on the recommendation of the superior council, were restricted to such practice as was consistent with their official duties, and were irremovable, *dum se bene gesserit*, the members of the provincial councils being appointed by the crown for three years, but eligible for re-appointment. The inferior or communal medical officers of health were appointed for three years, renewably, by the provincial boards, from the most competent in their opinion of the practitioners in their districts.

It was impossible in such a paper to enter into the details of the Act, covering as it did a multitude of subjects, but there were two or three features of such importance, and differing so greatly from what obtained in this country, that they could not be passed over. One was the rigid demarcation between medical and pharmaceutical practice, medical men being strictly prohibited from dispensing, and pharmaceutists from prescribing; the sale of proprietary medicines, unless approved by the superior council, being absolutely forbidden, and those medicines which alone might be supplied without an order from a medical man indicated in the pharmacopeia. The medical profession in Italy was indeed so jealous of its honour that the prohibition of dispensing was not felt as a grievance, and the relaxation of the rule under certain circumstances proposed in the special committee of parliament was withdrawn in deference to the protest of the medical congress at Bologna. Another question in which Italy was already in advance of this country was the prohibition, as in Germany, of the use of poisonous pigments in textile fabrics, wall papers, toys, &c., no less than in articles of food.

Instead, too, of the precarious method of "catching" a dealer in provisions or drugs unawares, or, more often, on the alert, required by our Adulteration Acts, the Italian law enjoined a deliberate inspection of all his wares at uncertain intervals, while the penalties, fines, and imprisonment, were much heavier than ours, which, pecuniarily considered, were too small to have any deterrent effect, taking into account the chance of evading detection or conviction altogether. It was, he feared, Utopian to hope for such a consolidation of public health legislation, complete as an outline but capable in its details of infinite development, superseding our present chaos of statutes, each aiming at finality, but overlapping and conflicting, worked by a like multitude of hetero-

geneous authorities, if not deliberately evaded by those on whom their administration devolved. If, however, our legislature could be brought to approach the vast question of the public health with something of the scientific and judicial spirit, and absence of party feeling and factious opposition shown by the Italian parliament, we might learn much from and find in this Act a guide, if not a model for our own legislature in the future.

THE ASSOCIATION OF PUBLIC SANITARY INSPECTORS OF GREAT BRITAIN.

THE ordinary monthly meeting was held on March 1 at the Carpenters' Hall, London Wall. Mr. HUGH ALEXANDER presided, and there was a good attendance.

The SECRETARY announced the death of the following members:—Messrs. R. Barnes, of Haslingden; W. Benson, of Leyton; W. Marley, of West Hartlepool; S. E. Sharman, of Sevenoaks; and T. Stace of Limehouse. The announcement was received with expressions of regret, and votes of condolence were passed.

The following inspectors were elected members:—Messrs. C. T. Garrett, Ashby Wouids Local Board; Tom Martin, Radstock Local Board; T. S. Ross, of the London County Council; and C. F. Weeden, Vestry of Hammersmith. Mr. J. D. G. Thompson, of Glasgow, was elected an associate on the recommendation of the Council. The Council also reported the receipt of a letter from the Right Hon. Earl of Aberdeen, accepting the Council's nomination for election to the position of an honorary member of the Association. The Council, therefore, nominated his lordship, and the Worshipful the Mayor of Leamington, for election as honorary members. The nominations were received with much applause, and the elections were unanimous and characterised by much enthusiasm.

The Council further reported the receipt of a letter from Dr. Alfred Carpenter, resigning his position as honorary member; the resignation was received with expressions of regret.

The Council then presented the following report on the Status of Sanitary Inspectors:—

The Council beg to report in accordance with the instructions of the general meeting held December 21, 1889:—

That they have considered the conditions under which sanitary inspectors are appointed, and the conditions under which they discharge their duties; and are of opinion that those conditions are inimical to the interests of the public health. The Council are further of opinion that those conditions are due to the defective state of sanitary law in the following particulars:—

1. There is no statutory definition of qualification of candidates for the position of sanitary inspectors.
2. There is not satisfactory statutory provision as to tenure of office.
3. Inspectors are not empowered to initiate proceeding by serving notices for the abatement of nuisances, however urgent they may be.
4. There is no prescription of minimum salary.
5. The officers employed are not uniformly designated.

The Council find the defects 1, 2, 3, 4, originated in the Nuisance Removal Act of 1855. That they have not been remedied by any of the numerous amendments of that enactment. That on the contrary they have been reproduced in the Public Health Act of 1875, and that in many districts they constitute a permanent hindrance to sanitary inspectors in the discharge of their duty to the public.

The Council therefore recommend that the influence of the Association should be directed to secure the following amendments in sanitary law:—

1. That every candidate for the position of sanitary inspector shall have a general knowledge of the building trades, and in addition shall possess a certificate in sanitary science.
2. That sanitary inspectors shall be elected to a permanent tenure of office, and shall only be dismissable for misconduct, or proved incompetence, with right of appeal to the Local Government Board.
3. That it shall be the duty of sanitary inspectors to periodically inspect the dwellings of the district to which they are appointed; and to receive complaints of nuisances and serve notices forthwith, requiring all necessary works to be done for the abatement of the nuisances. Such notices to be as valid, if confirmed by the local authority, as if served by the authority's order.
4. That in all appointments requiring the officer's whole time to be given to the duties of his office, an adequate minimum salary shall be prescribed.
5. That the officers now variously named sanitary inspectors, and inspectors of nuisances be designated sanitary inspectors.

HUGH ALEXANDER, Chairman.
SAMUEL C. LEGG, Hon. Secretary.

The CHAIRMAN then read the report; it was seconded by Mr. TIDMAN, and unanimously adopted.

Mr. D. RICHARDS, Assoc. San. Inst., Chief Inspector of Battersea, then read a paper on "THE REMOVAL AND DISPOSAL OF HOUSE REFUSE IN LONDON," printed on page 422.

WORCESTERSHIRE HEALTH SOCIETY.

A MEETING of this Society, the formation of which was the outcome of the Sanitary Congress held in Worcester in September last, when a committee was appointed, was held on February 1, in the Guildhall, Worcester. The chair was taken by Sir DOUGLAS GALTON. The following are the objects of the Society as set forth in the report presented to the meeting:—This Society is formed to promote attention to cases of neglect of existing sanitary laws, personal and domestic cleanliness, for prevention of infectious disease, and the rules of health generally. The agencies to be employed for this end are: (1) The delivery of lectures in drawing-rooms, mothers' meetings, men and women's clubs, and to popular audiences on the prevention of infectious disease, food, cookery, rearing of infants and domestic hygiene, and home nursing; by teaching the public generally what a healthy dwelling should be, with special regard to drainage, water supply, and ventilation. (2) In the printing and distribution of these lectures, and of small leaflets. (3) Providing subjects of interest for the mind, and encouraging healthy recreation and physical exercises. (4) Giving assistance to the constituted authorities in the promotion of sanitary improvements by drawing their special attention to any particular unsanitary condition. (5) Obtaining the assistance so far as is necessary of any other society. (6) Arranging for the repetition of the Society's lectures in towns and villages throughout the country, and for the formation of small local committees in connection with this organization. The rules provide that the Society shall be under the direction of a council, consisting of eight ladies and sixteen gentlemen, and an hon. secretary and treasurer. Also that the council shall meet in Worcester at least four times a year, and oftener if necessary.

The report and rules were adopted. Earl Beauchamp was elected patron of the Society.

The following were elected on the council:—Sir Douglas Galton, Sir H. F. Vernon, Mr. G. Allsopp, M.P., the Dean of Worcester, Canon Creighton, Mr. R. Berkeley, Capt. Hancock, Alderman W. Grosvenor, the Mayors of Worcester and Kidderminster, Captain Dowdeswell, Dr. Strange, Dr. Swete, Lady Georgina Vernon, Mrs. Hastings, Mrs. Gott, Mrs. Creighton, Mrs. Isaac, Lady Galton, and Mrs. Barrington. Dr. Dixey (Malvern) and Mr. Day were elected hon. secretaries.

PUBLIC HEALTH IN EGYPT.

(From our own Correspondent.)

IN March last year we published tables showing the birth-rate and mortality in Cairo and some of the principal towns of Lower Egypt, for 1888. We now give similar tables for 1889, including two towns of Upper Egypt, Assiout and Miniah, which correspond in a remarkable manner with those of the previous year in so far as regards the influence exercised by the Nile on public health.

In Cairo the difference between the maximum and minimum weekly mortality is not so great as in 1888, the highest and lowest being respectively 68·5 and 41·8 per 1,000; whereas in the previous year the figures were 97·2 and 31·8. The average death-rate for the year is 51·6 per 1,000, as against 50·2 in 1888. but it must be borne in mind that the population is undoubtedly greatly understated. The death-rate above five years of age is pretty constant for both years, being for 1889, 18·8, and for

1888, 18·0 As in the previous year, the influence of the falling Nile on mortality is very apparent. In the week ending August 1 the height of the river was 13·80 mètres, and the death-rate 66·1 per 1,000. The following week there was a rise of 2½ mètres, and the mortality at once diminished to 49·5. The weeks in which the death-rate exceeded the birth-rate correspond almost exactly with the season when the Nile was at its lowest. In the table this is indicated by the figures being in black type.

BIRTHS and DEATHS in CAIRO, 1889. *Natives only.*

Height of Nile Rodah—Mètres.	Week ending.	Births.		Deaths.						
		Number.	Per 1,000 per Annum.	Below Five Years.	Above Five Years.	Total.	Per 1,000 per Annum.	Above Five Years per 1,000 per Annum.	Percentage of Deaths below Five Years.	Temperature, Centigrade.
14·13	Jan. 3	476	70·1	168	120	288	42·4	17·6	58·3	14·6
14·08	,, 10	464	68·3	206	162	368	54·1	23·8	55·9	13·8
13·73	,, 17	428	63·0	171	134	305	44·9	19·7	56·0	14·3
13·89	,, 24	438	64·5	170	130	300	44·2	19·1	56·6	14·5
13·79	,, 31	455	67·0	158	126	284	41·8	15·3	55·6	13·5
13·69	Feb. 7	439	64·6	165	143	308	45·3	21·0	53·5	16·6
13·63	,, 14	418	61·5	174	118	292	43·0	17·3	59·5	16·9
13·56	,, 21	418	61·5	164	131	295	43·4	19·2	55·5	14·4
13·52	,, 28	384	56·5	172	144	316	46·5	21·1	54·4	19·5
13·47	Mar. 7	392	57·7	196	128	324	47·7	18·8	60·4	19·2
13·46	,, 14	384	56·5	179	134	313	46·1	19·4	57·1	15·5
13·42	,, 21	399	58·7	190	115	305	44·9	16·9	62·2	18·6
13·41	,, 28	400	58·9	214	99	313	46·1	14·5	68·2	21·2
13·40	Apr. 4	328	48·3	201	112	313	46·1	16·5	64·2	18·8
13·38	,, 11	358	52·7	208	129	337	49·6	18·9	61·4	21·6
13·37	,, 18	377	55·5	216	140	356	52·4	20·6	60·7	23·3
13·38	,, 25	358	52·7	220	144	364	53·6	21·2	60·4	20·4
13·34	May 2	366	53·9	235	143	378	55·7	21·0	62·1	22·0
13·34	,, 9	331	48·7	223	152	375	55·2	22·3	61·0	24·3
13·31	,, 16	363	53·4	259	139	398	58·6	20·4	65·0	27·3
13·35	,, 23	328	48·3	218	145	363	53·4	21·3	60·0	27·0
13·27	,, 30	328	48·3	226	139	365	53·7	20·4	61·9	27·4
13·26	June 6	375	55·2	231	141	372	54·8	20·7	62·0	28·6
13·21	,, 13	328	48·3	255	124	379	55·8	18·2	67·3	27·2
13·20	,, 20	389	57·3	281	128	409	60·2	18·8	68·7	29·2
13·21	,, 27	406	59·8	237	128	365	53·7	18·8	64·9	27·2
13·14	July 4	366	53·9	293	113	406	59·8	16·6	72·1	29·6
13·19	,, 11	390	57·4	319	127	446	65·7	18·7	71·5	28·3
13·43	,, 18	356	52·4	332	121	453	66·7	17·8	73·2	31·0
13·54	,, 25	394	58·0	318	147	465	68·5	21·6	68·3	31·1
13·80	Aug. 1	335	49·3	327	122	449	66·1	17·9	72·8	31·0
16·01	,, 8	339	49·9	236	100	336	49·5	14·7	70·2	29·1
17·37	,, 15	433	63·7	233	118	351	51·7	17·3	66·3	30·1
17·71	,, 22	392	57·7	223	125	347	51·1	18·4	63·9	28·0
18·28	,, 29	368	54·1	233	103	336	49·5	15·1	69·3	28·2
18·66	Sep. 5	370	54·5	232	112	344	50·6	16·4	67·4	26·0
19·03	,, 12	390	57·4	225	105	330	48·6	15·4	68·1	25·8
19·11	,, 19	414	64·0	204	108	312	45·9	15·8	65·1	26·3
19·23	,, 26	394	58·0	180	128	308	45·3	18·8	58·4	24·9
19·29	Oct. 3	443	65·2	198	131	329	48·4	19·2	60·1	25·5
19·36	,, 10	471	69·3	236	104	340	50·1	15·3	69·4	26·0
19·36	,, 17	384	56·5	203	116	319	47·0	17·0	63·6	25·8
19·03	,, 24	441	64·9	233	128	361	53·1	18·8	64·5	22·9
18·75	,, 31	432	63·6	190	132	322	47·4	19·4	59·0	22 9
17·56	Nov. 7	499	73·5	195	149	344	50·6	21·9	56·6	21·2
16·67	,, 14	478	70·4	209	127	336	49·5	18·7	62·2	19·5
16·00	,, 21	449	66·1	232	147	379	55·8	21·6	61·2	15·3
15·60	,, 28	370	54·5	229	127	356	52·4	18·6	64·3	14·8
15·27	Dec. 5	452	66·5	230	128	348	51·2	18·8	63·2	16·0
15·01	,, 12	446	65·7	202	153	355	52·3	22·5	56·9	16·4
14·85	,, 19	409	60·2	247	134	381	56·1	19·7	64·8	14·8
14·70	,, 26	399	58·7	260	149	409	60·2	21·9	63·5	12·5
15·09	Moyenne des 52 Semaines.	399	58·8	210	129	351	51·6	18·8	62·8	22·3

For the provincial towns the vital statistics are shown for periods of 4 weeks. Here, also, the excess of death-rate over birth-rate is indicated by the figures being in black type. With the exception of Damietta and Rosetta, whose inhabitants are obliged to store their water supply at high Nile for use when the river is low, on account of the water being brackish at the latter season, the mortality augments accordingly as the strength of the current diminishes. This may possibly be owing to multiple

BIRTH and DEATH-RATE per 1,000 per annum, 1889. *Natives only.*

Source of Water Supply.	Nile direct.								Katalbeh Canal. Raised by pumping.		Bahr Mehalla Canal.				Bahr Muezz.		Ismailia Canal.		Nile direct.					Average temperature, centigrade.
Periods of 4 Weeks ending.	Assiout.		Miniah.		Guizeh.		Cairo.		Mansoura.		Alexandria.		Damanhay.		Tanta.		Mahalla.		Chibni.		Zagazig.		Port Said.		Damietta.		Rosetta.		Nilometer. Rodah.	
	D.		B.	D.	B.	D.	B.	D.	B.	D.	B.	D.	B.	D.	B.	D.	B.	D.	B.	D.	B.	D.	B.	D.	B.	D.	B.	D.	Mètres.	
24 January	56·2	41·3	60·1	33·8	75·4	36·5	66·4	46·4	59·3	28·1	67·7	52·0	60·7	33·8	54·0	32·9	48·5	27·8	68·4	31·7	59·5	40·1	102·1	35·2	65·7	27·5	47·2	16·3	13·94	14·3
21 February	54·5	48·3	68·5	38·8	74·2	34·2	63·6	43·3	61·3	28·6	68·4	61·5	60·9	34·4	54·0	35·3	64·1	30·1	60·2	24·4	58·1	30·4	61·4	46·2	58·0	18·2	45·9	23·6	13·66	15·3
21 March	59·1	43·0	62·6	38·7	65·1	37·6	57·3	46·3	64·3	19·1	62·9	62·3	53·0	36·1	68·1	37·3	47·1	33·9	53·6	21·9	59·4	39·4	80·3	47·4	61·2	19·7	45·2	19·5	13·46	18·2
18 April	56·2	52·1	72·5	59·7	75·4	41·1	53·8	49·5	59·8	29·6	55·3	55·9	50·8	30·4	56·0	48·8	53·7	24·5	68·7	46·3	49·0	47·7	58·0	28·7	44·2	31·7	47·2	18·9	13·39	21·2
16 May	50·0	64·0	58·6	61·8	71·9	53·6	52·1	55·7	51·2	30·7	46·4	48·7	46·9	41·7	52·4	46·4	49·9	38·1	62·8	46·3	50·5	54·9	71·7	48·4	39·4	29·6	54·4	16·8	13·34	23·5
13 June	44·6	60·3	65·9	109·6	74·2	75·3	54·4	62·3	55·3	38·6	48·3	56·9	50·7	39·3	63·5	50·4	58·0	46·3	115·6	58·4	50·5	34·5	81·4	69·0	34·0	29·0	59·0	19·5	13·27	27·5
11 July	45·5	47·1	72·5	84·8	87·4	69·6	57·1	56·8	54·8	36·2	49·0	50·0	50·7	39·1	57·6	76·9	41·5	58·4	46·3	139·1	51·2	40·8	85·0	68·0	40·3	24·5	50·9	15·5	13·18	28·5
8 August	40·1	33·0	55·2	62·6	57·1	69·7	52·4	62·7	40·2	56·3	48·9	52·1	48·5	69·3	68·5	80·2	43·0	47·1	52·1	81·3	49·7	42·8	68·1	76·6	38·2	21·8	37·1	18·9	14·19	30·5
5 September	66·9	45·0	67·6	50·3	52·5	29·6	57·5	50·7	53·0	33·0	55·6	49·9	54·1	67·5	69·1	46·6	50·4	65·9	65·0	104·5	56·0	60·1	104·5	66·8	46·7	27·2	51·7	24·3	15·00	28·1
3 October	58·7	44·2	61·8	48·7	60 5	37·7	61·1	47·0	63·8	41·7	51·3	50·1	39·4	41·7	66·7	58·0	46·5	37·7	55·3	41·4	65·0	40·1	87·5	52·3	46·6	30·4	52·6	22·2	19·16	25·6
31 ,,	66·4	44·2	56·0	48·0	62·8	42·2	63·5	49·4	64·3	40·2	61·0	45·0	60·3	42·3	71·9	48·0	46·6	41·9	48·8	37·4	77·4	52·5	98·7	46·1	46·3	22·4	53·4	17·5	19·12	24·4
28 November	62·0	53·3	71·7	54·3	51·4	53·7	66·1	52·0	76·4	40·7	64·1	44·3	68·1	40·6	59·5	61·1	57·0	41·9	55·3	36·8	69·1	53·9	112·3	66·8	63·0	30·6	49·2	20·9	18·45	17·7
26 December	65·3	35·1	72·5	39·6	62·8	43·2	62·7	54·9	66·3	47·8	72·1	47·0	69·9	37·2	64·0	52·8	50·4	44·8	47·2	32·5	67·7	47·0	91·2	77·8	60·6	23·0	55·3	28·3	14·96	14·9
Total	56·0	46·9	64·2	55·2	65·4	47·9	59·6	51·1	58·9	40·4	57·7	51·1	55·5	46·0	60·0	54·5	50·3	40·9	55·6	69·6	58·4	43·9	85·5	55·4	49·5	26·4	41·0	20·1	15·98	22·5

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causes, but the exemption alone of the two seaside towns is at least remarkable.

Barrages near the mouths of streams are undoubtedly useful for irrigation purposes, but unfortunately in Egypt they help to concentrate the foulness of the river which is not only the sole source of water supply for the country, but also its universal sewer. It is difficult to indicate a complete remedy, but much amelioration would result if effect could be given to Mr. Cope Whitehouse's scheme for impounding water in the vast depression discovered by him, and which he has named the Raiyan Moeris. If this could be done—and there seem to be none but financial difficulties in the way—a volume of water could be discharged daily during the low Nile season, equal to twelve million tons. This amount ought to suffice for the creation of a current sufficient to wash away the greater portion of the impurities habitually cast into the river, and render thereby the drinking water of the people by so much the more wholesome. It may confidently be predicted that from the day Mr. Whitehouse's project is put into action the health of Lower Egypt will improve, and the death-rate diminish.

SOUTH AMERICA AS A FIELD FOR THE SANITARY ENGINEER.

(From our Special Correspondent.)

The Land of the Rising Sun.

Such is the title which the Argentinos are pleased to give to their country, and the national flag, composed of two blue and one white stripe with the rising sun in the centre, was floating over the Government house as we landed on the Mole at Buenos Ayres on the day of our arrival. This city is a most awkward place to arrive at in a large ocean steamer. Although there are large docks in which craft of all sizes up to about 2,000 tons burden enter, the larger ones dare not venture into the "Boca," owing to the shallowness of the River Plata, for although it is said to be about 100 miles wide here the large passenger steamships will not anchor nearer the city than from 14 to 15 miles. It therefore occupies a large portion of the day to get to land, to say nothing about the delay after reaching *terra firma* to get luggage through the Custom House. I felt at my ease the first night we arrived in this extraordinary city; on the landing stage were a score or so of our countrymen, who had come to meet friends like ourselves just arrived. We met the British subject in the highways and byeways (for there is no mistaking him), we also found him at the hotel in which we put up, although a French one, and within a few hours of our landing our names were inscribed in the books of the English (Cosmos) Club as honorary members during our stay, thanks to the kindness of a member to whom I was introduced. In addition to a few personal friends my introductions were many, and of a varied character, and I cannot leave this portion of my subject without testifying to the extreme cordiality with which I have been received by the native families it has been my good fortune to visit; while to the English friends with whom I have been brought into almost daily contact through my business relations, I owe a debt of gratitude it will be hard to repay.

At the request of a few of the more staid members of the British community resident in the country I beg to offer a few words of friendly advice to future comers to these shores from our own land. It is complained of our countrymen that they come here with a swagger and bounce, which is most ill-advised. They appear to think that because they are sent over here to fill certain situations and positions of trust, that all are to bow down to them, and that the native is beneath their consideration. They know that English capital is invested here to a large extent, but they ignore the fact that it is through the investment of that capital that they are here, and obtaining much larger salaries than they would get at home, with the chance, if they are discreet and careful men, of making a fortune in a comparatively few years. There are plenty of cultured and intelligent men in the country who are only too pleased to cultivate friendship with an English gentleman, but they cannot brook the airs assumed by the young fellows who know perhaps just enough of their professions to warrant their chiefs in sending them out, but who forget that they are aliens in a land, the native population of which are the descendants of one of the proudest nations on the face of the earth, and who lack the common-sense to improve the occasion that good luck, perhaps quite as much as their own abilities, has put in their way. Another thing I would impress upon my countrymen is to study the geography of South America a little before they venture to address letters here. I have been amused at the addresses on some of the letters which have been shown to me, at the same time that I was amazed at the ignorance existing in English houses of business as to *locale* on this continent. One letter I saw was addressed Monte Video, Paraguay; another Buenos Ayres, near Monte Video, while a third was directed to Buenos Ayres, Patagonia, South America! I can scarcely conceive English firms of the present day being so ignorant in reference to different nations on this continent, considering the amount of business being done with them; such ignorance shows that an evening class in geography would be very useful to clerks in offices, and, in some instances, to the employers also. I warrant no German firm would have made such blunders.

As regards the Argentine, correspondents have only to call at the Argentine Legation in London, and they can obtain gratis a good-sized coloured map of the country with a mass of useful information of an interesting and valuable character. I would, however, caution those who may take my advice on this subject not to believe too implicitly in the figures set down for the price of commodities therein, for unless a revised edition has been published recently they will be found very disappointing. These prices were printed at a time when gold was either at par or at a small premium, but as the price of gold rose, so also did that of the necessaries of life, and the terrific upset of the money market has completely paralyzed trade and put a stop to all orders for the time being, except for things that are absolutely required. Yet in the midst of this serious financial crisis, which would have caused a revolution in most countries, outwardly everything appears to go on as smoothly as possible.

There are no public meetings to protest against the Government. "This safety valve of popular discontent" is not allowed to be made use of in this land of liberty, unless the programme is first submitted to the authorities. Amongst themselves the public do not hesitate to speak their mind, yet strange to say, after "blowing off steam," they generally finish up with a belief that the boundless resources of the country will pull them through, and that before long gold will resume its normal value in the market or thereabouts, or in default that the gold and paper dollar will each be recognised as a different standard of value. Such in fact is the case at the present time, though it has been initiated by the public themselves. In some shops goods are marked in "oro," or gold, in others the value is calculated by the paper currency, which is, broadly speaking, the only money in circulation, for a silver coin is rarely met with. Gold is, of course, very scarce, and the bronze coinage (which is by no means large, but is similar to our halfpence and pence) is scarcely required, as there is a paper note representing five centivos, which at par value would be twopence halfpenny English, but at the moment is not worth more than a fraction over our penny. But whatever may be tacitly agreed to by the people, the awkward fact remains that the Government has to pay the interest on its borrowed capital in gold, and so long as the present heavy premium on the precious metal continues its loans will cost from 12 to 14 per cent., while those of Brazil are not costing at the most more than 5 per cent.

We were recently much startled on perusing our morning paper, to find that the Minister of Finance

had issued orders for some most praiseworthy financial reforms, and these were followed by other edicts of the Government, which, if faithfully carried out, should go far to relieve the present abnormal state of affairs. These edicts were, "that the currency was to be reduced to one hundred million of dollars, which would withdraw from circulation over forty-four millions of the paper currency, and which latter the Government guaranteed should be burnt." The other edicts were that certain public works, not urgently required, should be stopped, and that promises made to provincial governments to contribute towards local undertakings should be rescinded. This, it is calculated, will save another twelve millions or so. I believe these measures were looked upon favourably by all classes, and the Government naturally looked for a considerable fall in the gold premium. But this fall has not been effected to the extent anticipated as yet, and there is very little difference now in the price of gold as compared with quotations prior to the promulgation of the fiscal measures alluded to. The Government are also endeavouring to sell a certain amount of land for gold, and a new loan is being negotiated, but reports vary so much with regard to it that I prefer to advance no opinion upon the subject until I am better informed. Practically then this scheme of the Government to reduce the gold premium has failed to give relief at present, and now people are looking to other means to produce the marvellous *coup*. Should these fail, some other ground will surely be found on which to rest the "anchor of hope," for the population is a most sanguine one, and, like Mr. Micawber, always waiting for something to turn up. Meantime the daily current of events runs on, the newspapers, native and foreign, published here, hurl their darts at this or that minister, or at the Government in a body, while that august assemblage is in its turn held up as the acme of perfection by those prints who espouse its cause. The public buy and barter either for paper or gold, but the wholesale dealer is deaf to all the blandishments of travellers, and positively refuses to put another dollar's worth of goods upon his shelves unless he is absolutely forced to do so. It is not likely that any sane man will speculate in new stock or give orders unnecessarily when he has to buy gold at a high premium to pay. It may readily be assumed that with such a premium on the precious metal the price of commodities has risen. This is the case, and they rise from day to day with the advance of the metallic standard, but, unfortunately for the population, they do not fall with a drop of "points" in the gold quotation, and I do not suppose commodities will ever be as low in price again as they were before this "stalking horse" appeared in the land.

It may perhaps be considered presumptuous in me, a resident of less than two months in the country, to express an opinion as to the best means of putting an end to a state of things that is eating away the very vitals of the country, and bringing discredit and demoralisation upon her public men. To my mind the answer is simple. Cleanse the Augean stable, let the people rouse themselves from their apathy, and insist on being governed honestly. Let them demand that their expenditure be kept within their income. Let them not forget that Brazil was only a few years since getting into a similar condition to themselves, but, like sensible men, the Brazilian Government determined to put an end to the danger by not spending one penny on national works (excepting such as could be paid for from income) until they had recovered their monetary position, and what has been the result? To-day their paper currency is worth more than gold, and they can borrow in the European markets at 4½ per cent. Let the Argentinos remember this, and do likewise, and depend upon it all will be well.

The country is possessed of immense wealth, in fact some of its riches are at present practically unknown, and it is because the powers that be have endeavoured to realise these riches too hastily, that much of the present financial trouble has been brought about. Here is a country with an area of considerably over a million of square miles, with only about four millions of inhabitants. Wherever it is cultivated it yields excellent, and in some districts, enormous crops; millions of head of horned cattle, and sheep roam over its vast plains, and the number of horses can scarcely be less. And when we consider the vast tracts of land still in the state that nature has left it, into which a spade or a plough has never entered, some idea may be formed of what is in store for future settlers upon it. Large portions of this land require no manure, and I was assured by one owner in the northern part of the kingdom, which is, of course, the hottest, that he had sown his land the last twenty years without the expenditure of a single penny for manure, and that the crops were still as good as ever. Fruit is abundant, especially peaches, which grow wild to an enormous extent. Asparagus, too, is an important article of commerce, and grapes appear to grow everywhere. Wine is made in increasing quantity, and is good sound wholesome drink. Vegetables generally are, however, not cultivated to the extent they may be, and the scarcity of these necessary dietetic adjuncts has been the principal deficiency I have felt in my daily food. A few English market gardens established in the vicinity of the principal towns would be a great boon, and would repay their owners well.

The mineral wealth of the country is practically undeveloped, but that it abounds with a variety of metals, including gold and silver, there is scarcely a doubt, and I believe mineral oil will some day be found in abundance. That it exists is certain, for pools of it are to be found in some parts, as I am informed, on the surface of the land. As to coal, opinions are divided as to its value. Some contend that it is not good enough to pay for working, while others hold the contrary opinion. This is one of the problems to be solved in the future. At present the bulk, if not all, of the coal used comes from England; but wood is an extensive article of fuel.

To return to Buenos Ayres itself. It is one of the most cosmopolitan cities in the world, and one in which the native population is outnumbered by the foreign residents. I have before me a copy of the last census of the city, including the two suburbs of Belgrano and Flores, taken in September 15, 1887. At that time its population numbered 433,315, but I am told it has increased considerably since then. At the date in question it gave residence to 89 Dutchmen, 100 Greeks, 130 Bolivians, 143 Peruvians, 156 Danes, 188 Russians, 227 Swedes, 444 Chilians, 579 North Americans, 596 Belgians, 752 Brazilians, 1,057 Portuguese, 11,136 Orientals, 1,446 Paraguayans, 2,127 Austrians, 2,582 Swiss, 3,900 Germans, 4,160 British, 20,031 French, 39,562 Spanish, 138,166 Italians, and 1,070 of other nationalities, making 228,641, while the Argentinos themselves only numbered 204,774. The great preponderance of Italians over other foreigners should be noted, and I understand this great influx is a subject of discussion with the Government, who would prefer to see an increase in the number of Spaniards.

Before I left England there was a great talk about the extensive sanitary work being carried out in Buenos Ayres, but I found it a city reeking with cesspits, the stenches from which the pedestrian is constantly inhaling in his walks through the streets, and which are at times as bad as in some of the worst drained continental cities. What it may be in years to come, when the great drainage scheme is completed, is another matter, and were it not for the fine climate and the fresh breezes that are constantly blowing, the inhabitants would inevitably suffer from endemic disease. As it is diphtheria is very prevalent, and an English medical man of repute in the city, Dr. Davison, is now engaged in writing an exhaustive work on that disease. Some eighteen years since, a contract was entered into with the late Mr. Bateman, C.E., to build the main sewers throughout the city. At that time, I am told, there was not a two-storied house in Buenos Ayres, or a cellar or underground apartment. All houses were built on the old Spanish or Moorish style, viz. ground floor only, with flat roofs and a courtyard or *patio*, round which the

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rooms were grouped, entered by half-glass doors, which served for window and door as well, and formed the only means for admitting light and fresh air to many of the rooms. Unfortunately for the inhabitants, too many of this kind of room exist at present. This being the state of matters, to save the expense of deeper excavations, the Government decided to have the sewers made much nearer the surface of the ground than prudence should have suggested. But the appearance and arrangements of the city have now changed. Land has risen considerably in value, two and even three-storey houses have taken the place of the old ground-floor buildings, and cellars and underground rooms form part of the modern houses. Notably some of the popular restaurants are now below the level of the streets, and where this is the case, the sewers are at a higher level than the underground rooms. The sewers have been finished some years, but as there appears to have been no arrangement in the contract for making connections with the houses, they have remained useless and a dead letter, and I have heard them sarcastically called "Baldwin's legacy." An English company has recently been formed in which the successors of Mr. Baldwin are, I hear, largely interested; who are to pay the Government a large sum of money, in return for which they are allowed to charge the inhabitants what they please for making the connections with the houses, water supply, &c. Already complaints are rife respecting what are represented as the exorbitant charges this company is making for their services, and they have been made the subject of newspaper comments. The inhabitants have a considerable time allowed them in which to have these connections made, and I believe it is likely to be three or four years before the city will be properly drained. At present there is the inconvenience to contend with of the traffic of different streets being interfered with, by a house here and there having its connections made, and this is likely to be the case as long as the time allowed for the work in question has not expired. The proper way would have been to have closed a certain length of a street (for all are built in blocks with intercepting streets at right angles at every fifty houses) and made it imperative in all cases to have the connections made. This would have reduced the inconvenience to traffic to a minimum, and have accelerated the work.

Another very important matter that does not appear to have been finally decided upon, is as to the disposal or utilization of the sewage. It is rumoured that it is to be discharged into the river a few miles below the city, but there is fortunately a section of the community who are averse to such a course, and who will endeavour to bring public opinion to bear upon the matter, and so prevent such a mistake. In conversation with several intelligent persons I was surprised to find how indifferent they were in this matter, and how they ridiculed the idea that such a plan would be injurious to health. As for the waste of the sewage, that in their eyes was immaterial. They argued thus:—"This is a running river, flowing onwards to the sea throughout its whole course, some two to three thousand miles, and as we take our supply of water considerably higher up than the spot at which we discharge our sewage, how can it affect us." But they do not look at the future, or consider how in years to come their city may be affected from towns above them, or how they even at the present time may injure those below them on the river. Here is a country in which it is computed 200,000,000 of people may live with plenty of breathing room, although there are only 4,000,000 at present; but at the rate it is filling up, towns will soon be springing up, and the banks of this noble river will no doubt be selected for the site of many of them. As an instance of the rapidity with which towns grow, I may mention La Plata, some 35 miles farther south than Buenos Ayres, where a large port is now in course of formation. Six years since, scarcely a house existed in it; it is now a city of 60,000 inhabitants, with streets the narrowest of which is 60 feet wide, while some of the buildings are finer than those in Buenos Ayres itself, and it is lit throughout by the electric light. This city draws its supply of water from the River Plata (as all others built on its banks must of necessity), and will no doubt want to discharge its sewage into the river if the capital sets it the example.

Rosario, 195 miles north of Buenos Ayres, and also on the river, is just completing its main sewers, and at present numbers some 90,000 inhabitants. There is a talk there of discharging the crude sewage into the river, which is, of course, much narrower than at Buenos Ayres, and whence the water supply is also derived. The people there argue "If the capital is allowed to do it, why should not we?" Fortunately there are some few intelligent men in that town, comprising some of the leading medical men, who see the danger and the waste, and who will use their most strenuous efforts to prevent such a dangerous scheme being carried out. Above this and between it and Buenos Ayres, and again below the capital city, new towns will, in course of time, spring up, and this is only taking into consideration one side of the river, so it can be easily surmised what the state of the country would be in the future, if this idiotic scheme is allowed to be carried out. I must mention that this great river brings down daily with its current, great quantities of mud and silt, which deposit themselves more or less as they sweep along, and with which the solid particles of the sewage will also become mixed and deposited.

As cement is used to an enormous extent, the houses being built of brick, and faced with that material, I have endeavoured to impress upon the leading men with whom I have come in contact, that one of the best plans of utilizing their sewage would be to adopt the same method carried out at Rio de Janeiro (see SANITARY RECORD, December 16, p. 283), to make cement of the solids, and send a harmless effluent into the river. The works at Buenos Ayres are of an extensive character, and comprise storm water conduits as well as the main sewers; and to show how necessary are these conduits I may state that, in times of heavy rains, a volume of about 9,000 cubic feet enters them per second, and they have altogether a discharging power of 11,037 cubic feet per second.

The water supply, which appears to be ample not only for the present size of the city, but for a large increase of the inhabitants, is taken 800 yards from the shore, and 40 feet under the bed of the river. From here to the first pumping station the length of conduit is 5,721 lineal mètres, and will carry 20,000,000 gallons per day. Here it is properly filtered, and carried by iron pipes to the pure water reservoirs; these will hold 14,062,500 gallons of water kept fresh and pure. When it is considered that the bulk of the material for making these great works, and for carrying the water to the houses, with the fittings, have been imported from England, some idea may be formed of the value this market has been to English manufacturers, but this is a mere nothing to what it promises to be in the future.

Sanitary appliances, such as closets, lavatories, baths, &c., are being imported in large quantities, and this will go on until the entire city is provided for. These, I need scarcely say, are of English manufacture, and the houses of business devoted to this trade are well stocked with the newest and best goods from English manufactories. Other towns will follow in the same direction, in fact, have already commenced to do so. At Rosario the Compania de Aparatos de Sanidad del Rio de la Plata, an English company, the head offices of which are in London, are busy making the connections, and fitting up the houses with the best English sanitary appliances. The company have been fortunate in their selection of a manager and representative, Mr. Macfarlane, an English sanitary engineer, both intelligent and energetic, who has carried out several works of importance at home. This gentleman has selected workmen from some of the most noted firms in London, and can boast of a staff of plumbers second to none. I had an opportunity of seeing some of their work, which was most gratifying to me as an Englishman, and it was very pleasing to observe how

the native families took Mr. Macfarlane's advice, and appeared to place the utmost reliance on what he proposed; indeed, it is quite certain that they rely on us in this all-important matter of sanitation. Men of ability and intelligence, good material, and reliable workmen are all that is wanted to secure a most important trade to ourselves for ages to come. Another important undertaking recently introduced in the capital, is the Buenos Ayres Dairy Company. The inception of this idea is due to an English gentleman, Mr. Charles J. Christie, a resident in Buenos Ayres, and although the capital employed is mainly native, the entire carrying out of the works has been under the supervision of the gentleman named. The company have an estate of 5,000 acres at Alegre, some 80 miles south of Buenos Ayres, accommodating a herd of 2,000 cows, besides calves. The bulls are all pedigree animals, imported from England. Here butter is made, and some of the best I have ever tasted, and with the milk is sent to Buenos Ayres daily, the Company having a large depôt adjoining the "Sud" railway terminus in the city. All the materials, machinery, and appliances for this large undertaking has been imported from England, and all the skilled labour in each department, even to many of the milkers, is from the British Isles. Another estate has recently been purchased, nearer Buenos Ayres, and this will be devoted exclusively to the manufacture of cheese, the great proportion of which is now imported, the native made article being of very inferior quality. By the invitation of Mr. Christie I spent a few days at Alegre, and was much impressed with the completeness of the sanitary arrangements, all of which are on the most modern English plans. This remark also applies to the central depôt in Buenos Ayres, where nearly 100 horses and carts are housed. Amongst the English machinery and appliances imported for this undertaking I saw in use were, the dairy utensils of Messrs. Freeth & Pocock, Laurence's refrigerators, and Hathaway's, and Llewellyn's butter churns; the cream separators are the "Victoria," by Freeth and Pocock; the engines and boilers are Nicholson's, and the ice-making machinery were supplied by Pontifex & Wood. Amongst the agricultural machinery, &c.. I noticed articles from Ruston & Proctor, Maynard, Stalker, Wemyss & Co., Pickering, Harrison, McGregor & Co., and Jeffery & Blackstone. Considering the indifferent manner in which this city has hitherto been supplied with dairy produce, the advent of the Buenos Ayres Dairy Company, is an epoch in the history of the country.

I could extend my remarks in connection with English trade with this country to a much greater extent, but as this communication is intended for the information of those interested in sanitary work, I feel that I have no right to encroach upon your space for other purposes. My object has been to show English manufacturers of sanitary appliances what an important outlet they have for their wares in this country. I shall be pleased to give any further information in my power to those interested in supplying this important country.

SANITARY MATTERS IN GLASGOW.

(From our own Correspondent.)

A MEETING of the Sanitary Association of Scotland was held on January 30 in Glasgow, Mr. Peter Fyfe, President, in the chair, for the purpose of awarding the certificates of the Association to the successful candidates at the examination in Glasgow on January 14. Out of the 18 candidates it was found that 13 had received certificates. The following are the names of those successful:—Wm. Campbell, Houston, Sanitary Inspector; Robert Lindsay, Edinburgh, Inspector of Poor; Alexander Hay, Barony, Parish Assistant Inspector; Charles B. Hutchison, Dalkeith, Inspector of Poor; Daniel McKercher, Edinburgh, Sanitary Inspector; Dr. Lewis, Houston, Medical Officer; John Cameron, Linlithgow, Sanitary Inspector; William Dick, Midlothian, Inspector of Poor; William W. Kelso, Paisley, Sanitary Inspector; John Simpson, Aberdeen, Plumber; David Robertson, Girvan; John McInnes, Glendaruel. Inspector; Joseph R. Wilson, Helensburgh, Water Manager.

Certificated Sanitary Inspectors.

The next examination is to take place in Edinburgh about the end of April. Examiners are to be Dr. Russell, Glasgow; Dr. Littlejohn, Edinburgh; Mr. Mackay, Sanitary Inspector, Govan; Mr. Cameron, Sanitary Inspector, Aberdeen.

The Sanitary Inspector of the city has just completed an inspection of the cowhouses, or, as they are termed in Scotland, byres for cows. He is also at present conducting an inspection of the stables for horses. There are altogether 122 byres within the municipality, containing at present 852 cows. Special attention was directed to the following points in the inspection:—The cleanliness of the byres, cows, and those employed in connection with them; the light, ventilation, drainage, and paving of byres and court. In 20 byres there were discovered 39 horses stalled alongside or opposite to cows, which both he and Principal McCall, the Inspector under the Contagious Diseases Animals Act, consider very objectionable. In 53 byres the number of cows exceeded 10, but the average number was 7, which is considered a fair maximum to be allowed. After making some suggestions, and pointing out certain ones that are objectionable, he recommends methods to be adopted by which a supply of fresh warm air can be introduced, as the necessity of such is now admitted by authorities on cattle and cattle diseases. He also suggests the novel idea of a hospital byre, or reception house, where cows suffering from or suspected to have infectious disease could be isolated or treated. The subject has been remitted to the Magistrates Committee, who have the granting annually of the licences to cow-keepers.

Byres for cows.

The third annual meeting of the Scottish Society for Registration of Plumbers took place in Glasgow on the evening of January 20. During the past year, 12 master plumbers and 19 journeymen had joined the Society, and the membership now consisted of 89 masters and 138 journeymen, a total of 227.

Society for Registration of Plumbers.

During the year 1889 there were 13,128 deaths registered within the city, as compared with 11,675 in the year preceding, an increase of 1,453, representing a death-rate of 25 (24·86) in place of 22 (22·19), so that the descending series of death-rates which had been noted since 1883 is now broken. In that year the death-rate was 28, and since then successively 27, 26, 25, 23, 22, and now it stands at 25. The principal causes of this increase are as follows:—firstly, an epidemic of measles; secondly, an epidemic of whooping-cough, and, thirdly, greater fatality of pulmonary diseases. From these three sources an increase of 1,263 deaths out of a total increase on the year of 1,453 is derived. The following are the figures:—

Annual death-rate.

	1888.	1889.	Increase.
Measles	205	675	470
Whooping-cough ...	409	796	387
Pulmonary Diseases	3,861	4,267	406
Totals	4,475	5,738	1,263

The following figures show the movements of the death-rates of Glasgow during the last thirty years:—

Mean death-rate,	10 years	1859–68	...	30·1
,, ,,	10 ,,	1869–78	...	29·8
,, ,,	5 ,,	1879–83	...	25·9
,, ,,	5 ,,	1884–88	...	24·6
,, ,,	10 ,,	1879–88	...	25·3

All these calculations are based on the Registrar-General's estimate of the population. According to the medical officer's estimate of the population, the death-rate of 1889 was only 24 (23·54) per 1,000. The Registrar-General estimates the population of Glasgow for 1890 at 530,208, which is an increase of 2,064 upon his estimate of 1889.

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THE ALLEGED UNSANITARY CONDITION OF THE MIDDLESBROUGH MUNICIPAL BUILDINGS.

(From our own Correspondent.)

A SERIOUS question has arisen in connection with the fine architectural structure erected jointly by the Middlesbrough Town Council, the Middlesbrough School Board, Middlesbrough Board of Guardians, and the Stockton and Middlesbrough Water Board, to serve as municipal buildings for the borough of Middlesbrough. The edifice was opened just a year ago by the Prince and Princess of Wales, and, with the town hall attached, forms a handsome block in one of the main streets. Connected with the building are also the police courts, fire brigade department, and all offices and residences for the chiefs of the police force and fire department. Soon after entering on his residence in the portion assigned to him, the family of Chief Constable Ashe were stricken down with illness, rendering a prolonged visit to the seaside necessary to recruit, during which opportunity was taken to thoroughly examine the sanitary arrangements on which was fixed the cause of the illness. So far as could be seen, the drains and sewers were said to be in a perfectly satisfactory state; but lately the whole family of the chief constable were seized with scarlet fever, and the blame is attached to the drainage. Two of the family of Mr. Ashe have succumbed to the fever. The matter came before the quarterly meeting of the town council a month ago, when Alderman T. Hugh Bell said the complaint reflected most gravely upon the sanitary condition of the premises. He suggested that a complete sanitary survey of the building should be made by the North-Eastern Sanitary Association, in order to have proper sanitary arrangements for residence effected. The suggestion was taken up by the Sanitary Committee, and at their request the North-Eastern Sanitary Association sent down Mr. Cleary, an inspector, to thoroughly examine the drainage system. The inspector, who has been accompanied on many days by the architect to the buildings (Mr. George Gordon Hoskins, F.R.I.B.A., Darlington) and the borough surveyor (Mr. Latham), has now been engaged for a fortnight making a most minute and critical survey and test. Several important defects have been proved in the construction of the drains and in the various pipes connected with the sewers, all of which the inspector's staff of workmen have remedied as they proceeded. Mr. Hoskins has publicly stated that no fault has been discovered which would in any form allow sewer gas to escape into the dwelling of the chief constable so as to cause the disease from which his family have suffered. The inspector's report on his examination will be submitted to the Streets Committee and then to the council as soon as his work is completed. Meantime, the Watch Committee have given Mr. Ashe permission to vacate the residence provided for him, and to take a house away from the buildings. At a Council meeting held on Tuesday last, several councillors complained that the inspector had not been also asked to undertake an examination of the ventilation of the police court and other offices, which were said to be very bad. This splendid pile of buildings cost the town about £120,000, and surprise is expressed that within three years of erection such a complete inspection in relation to so important a part of their construction should be found necessary.

"STATISTICS OF INSANITY IN ENGLAND, WITH SPECIAL REFERENCE TO EVIDENCE OF ITS INCREASING PREVALENCE."

THIS was the title of the paper read by Mr. N. A. HUMPHREYS, of the Registrar-General's Department, at the fourth ordinary meeting of the present session, held at the Royal School of Mines in Jermyn Street. The president, Dr. T. GRAHAM BALFOUR, F.R.S., in the chair.

Mr. Humphreys' conclusions may be summed up briefly as follows:—1. It has frequently been admitted by the Lunacy Commissioners that there exists an unknown number of the insane concerning whom they possess no official information, and who are not included in the numbers dealt with in their reports. 2. The census enumerations of 1871 and 1881 throw light upon the amount of this unregistered insanity, since the householders' schedule at each of those censuses registered information concerning all persons of unsound mind enumerated in those years. 3. There is the best ground for believing (*a*) that these census numbers of the insane err on the ground rather of deficiency than of excess; and (*b*) that the numbers enumerated in 1881 were more correct, that is, that they were less deficient in that census than at the previous enumeration. 4. The Lunacy Commissioners have frequently expressed the belief that a variety of influences have from time to time in recent years operated to bring within their official cognisance a constantly increasing proportion of the existing cases of insanity. 5. Assuming the greater accuracy of the census figures as a measure of the aggregate cases of insanity the increase of existing insanity in the years 1871–81 was 7 per cent. instead of 12 per cent. as shown by the Commissioner's figures, a difference probably due to more complete registration by that authority. 6. The proportion to population of cases of insanity known to the Commissioners, although showing a marked and continuous increase during the thirty years embraced by their statistics, also show a marked decline in the rate of increase. 7. The value of the Commissioners' statistics of admissions to asylums is vitiated by the impossibility of separating the really new cases from those admitted from among cases already existing in workhouses, or from pauper cases residing with relatives, or from the large reserve of unregistered cases. 8. Apart from the misconception due to accepting the increasing ratios of registered insanity as conclusive evidence of a real increase of insanity, there has been beyond question an increase in recent years of existing cases of insanity due to what has been called "accumulation." 9. It is shown in the paper that there has been a marked increase in the mean age of inmates of asylums enumerated at each of the last four censuses in 1851, 1861, 1871, and 1881. 10. Insuperable difficulties lie in the way of measuring the effect on the mortality of the insane, and hence upon the existing cases of insanity, of the constant aggregation of increasing proportions of the insane in asylums, because no information exists concerning the rates of mortality among the insane in workhouses, or among those residing with relatives, and neither in asylums or workhouses. 11. The more complete statistics issued by the Statistical Committee of the Metropolitan Asylums Board makes it possible to measure with approximate accuracy the effect upon the number of insane patients under treatment in the metropolitan asylums for imbeciles at Leavesden, Caterham, and Darenth. Without therefore venturing to say that there has been no increase of insanity in England in recent years, many reasons have been pointed out for hesitation in accepting any insanity statistics which we at present possess as evidence conclusive of any real increase of the rate of occurring insanity.

The undermentioned took part in the discussion that followed: Dr. Hack Tuke, Dr. G. H. Savage, Mr. Frederick Hendriks, Dr. G. B. Longstaff, Mr. J. P. Richards, Dr. H. F. H. Newington, and the President.

THE PLUMBERS' COMPANY.

A LARGE public meeting was held in the Manchester Town Hall under the presidency of the Mayor, Mr. ALDERMAN MARK, for the distribution of certificates granted by the Plumbers' Company to plumbers in the Manchester district.

The MAYOR said no body of workmen engaged in the construction of dwelling-houses could, through their ignorance or carelessness, inflict so much danger on the public health, or cause so much loss and inconvenience to the householder, as plumbers. The length of time a man had been in the trade was no guarantee of his efficiency, and a careful technical examination was the only test which would satisfy the requirements of public

comfort and avert the existing dangers to public health. He urged that even those plumbers who had had many years' experience in the trade should avail themselves of the facilities provided at the Technical School to learn something of modern science connected with the plumbers' art.

Mr. JOHN HOLDEN, chairman of the Manchester Council, moved a resolution affirming that "The registration system, properly carried out, will afford great protection to the public against the effects of defective plumbing, particularly in respect of sanitary arrangements; and, inasmuch as the system must tend to raise the *status* of the plumbers' craft, it deserves the support of the trade."

Mr. COUNCILLOR CORBETT (Salford) supported the resolution, which was unanimously carried.

BUSHEY SEWAGE.

MAJOR-GENERAL C. PHIPPS CAREY, R.E., one of the Inspectors of the Local Government Board, held a local inquiry at Bushey on February 14, into the subject-matter of a petition of the Watford Union Rural Sanitary Authority, asking for power to take certain lands, otherwise than by agreement, for sewage disposal purposes. The petition was supported by the Hon. Sydney Holland, instructed by Messrs. Sedgwick, Turner, and Oddie, and by Mr. Urban Smith, of Westminster, the sanitary authority's engineer; and was opposed by Mr. Cutliff, on behalf of the owner of the land, and by Mr. Cresswell, instructed by Messrs. Lovell, Son & Whitfield, on behalf of the adjoining owners of property, assisted by Mr. Lemon, M.I.C.E. Mr. Bishop, on behalf of the London and North-Western Railway Company, opposed the acquirement of a small portion of the land required by the sanitary authority as a site for a pumping station.

The land proposed to be acquired for disposal purposes is situate without the parish of Bushey, but within the district of the sanitary authority.

Mr. URBAN SMITH stated that the chief reasons for seeking land outside the parish, and down the valley were, that a larger proportion of the sewage could be gravitated to the land selected than in the case of going to lands within the parish; that the effluent would be discharged into a large flow of water below Watford, instead of into a much smaller flow above the town, and generally, that the levels, configuration, and soil of the land were more suitable than in the case of land within the parish.

The objectors took the line that the sanitary authority had no right to take the sewage out of Bushey parish into another, although both parishes were within the authority's district, if any land could be found within the parish of Bushey which could be made reasonably to serve the purpose; and argued that the advantages claimed by the sanitary authority as attaching to the land sought were not sufficient to entitle them to go there.

In the event of powers being given to the sanitary authority to acquire this land, it is proposed to adopt a chemical process for the clarification of the sewage, and to pass the effluent through land underdrained and otherwise prepared to receive it.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

"Something attempted, something done."

BEXHILL (Population, 4,550).—The climatic advantages of Bexhill are such as to bring about a very favourable condition of public health, and it is to this cause that Dr. J. Wills attributes the very low death-rate (12·96 per 1,000) recorded for 1889. There is practically unlimited air-space at the back of all new houses and streets, and no stagnant water; and the fewness of the defects noticed or complaints received as regards sewerage, &c., speak well for the sanitary administration of the place There was a comparative absence of typhoid fever, only one death, an imported case, being reported, and no others coming under notice. Two deaths occurred from diphtheria, these being directly attributable to house drainage. There were no deaths from any of the other zymotic diseases.

Low death-rate.

Natural advantages.

HASTINGS (Population, 57,176).—Mr. C. Knox-Shaw's annual report for 1889 is a most favourable one, both as regards the public health during the year, and the amount of sanitary work carried out. The very low death-rate of 12·4 per 1,000, and the zymotic rate of 0·63 per 1,000, afford abundant testimony to the salubrity of of the borough; besides which, the information given as to its sanitary condition and the means taken to maintain its standard of excellence should reassure the most exacting of health and holiday-seekers. Matters of private and public drainage, and water supply are made of great importance, and the past year was prolific in improvements in this direction. Upwards of 200 new houses have been erected within the borough during the last year, the drainage of which has been carried out on the most approved plan; the drains have all been tested with water pressure, and are efficiently ventilated. Nearly 100 premises have also been redrained under similar sanitary conditions, and the drains similarly tested. Several new roads in the borough have been laid out and paved, and various improvements have been made in the public pleasure grounds and gardens, reservoirs, and store-yards belonging to the corporation. Mr. Knox-Shaw is anxious for the adoption of the Infectious Disease (Notification) Act in the borough. He considers that the compulsory notification of infectious diseases in London will have a real influence on the diminution of infectious disease in health resorts within proximity of the metropolis, as it will now be less easy for convalescents to be removed to the seaside whilst they are in an infectious state. He also thinks that the adoption of the Act in Hastings would be likely to afford both a protection and a guarantee of safety to intending visitors, upon whom so much of the prosperity of the borough depends. This is sound advise which the Town Council would do well to follow.

Drain testing.

Notification of disease.

KIDDERMINSTER (Population, 26,000).—Mr. Corbet speaks in a very satisfied manner of the sanitary work carried out in 1889. The duties were made very heavy by the prevalence of scarlet fever and measles, no less than 1,051 cases of the latter disease being reported and visited with this satisfactory result, that the children were more thoroughly nursed and cared for in the epidemic than has ever before been noticed, and that there was the comparatively small mortality of 18. The few cases of enteric fever and diphtheria were mild in type and not associated with any sanitary defect. It is encouraging to note that the general work was very readily carried out. Mr. Corbet states that the inhabitants appear to understand more and more its importance, and with very few exceptions fall in with orders and recommendations.

Scarlet fever and measles.

MERTHYR-TYDFIL URBAN (Population, 57,000), and RURAL (Population, 17,732).—Mr. T. Jones Dyke is an ardent advocate of school closing as a preventive measure against the spread of infectious disease, and his reports for 1888 upon these districts contain fresh evidences of his belief in the efficacy of this proceeding. The importance of good sanitary appliances to school buildings is also brought into prominence. In an outbreak of typhoid fever, when many children were attacked, all of whom were scholars at the Cefn Infant Board Schools, it was found that the closet accommodation was most imperfect, permitting a free escape for the sewer gas into the open air, the effluvia being thence drawn into a small class-room in which 50 to 60 children daily assembled. In every instance, the first case in a house infected was that of a boy or girl who had attended at this room. The large number of cesspits in the town undoubtedly assisted the

School closing.

spread of the disease, as it was apparent that in some cases persons had derived their infection from excreta which had been thrown into those receptacles. The rural district of Gelligaer was visited by small-pox, and 40 cases were reported with 5 deaths, 3 of unvaccinated persons. The sanitary condition of the two districts was comparatively favourable, and Mr. Dyke speaks with satisfaction as to the results of the sanitary works hitherto carried out. He points to the need for continued exertions in various localities both in town and country where the death-rates remain high. The returns for 1888 (21·8 and 19· per 1,000 respectively) were below the average; a noteworthy feature being the large proportion of deaths from acute lung diseases.

Small-pox.

STAPLETON (Population, 14,800).—The public health of this district during 1889 was so satisfactory that Dr. William Brown had not much material for his annual report. He shows, however, that the almost entire absence of epidemic disease was an opportunity for much useful sanitary work, by which the town was kept in good condition. In consequence of serious floods at the beginning of the year, whereby large deposits of foul mud were left on some of the streets on the fall of the water, an amount of extra work devolved upon the sanitary staff, both of cleansing and disinfecting, and this was efficiently performed. Dr. Brown calls attention to the condition of private streets, and urges that the owners be compelled to maintain them in better order. A great number of sewer-connections were made to the main system, but in consequence of an increase of population in certain localities this needs extension, and plans are in course of preparation. The death-rate for 1889 was 13·3 per 1,000, and the zymotic death-rate 0·8 per 1,000.

Effects of floods.

Private streets.

Sewers.

TOWCESTER RURAL (Population, 12,251).—It is a sign of the good sanitary condition of the Towcester district that the annual returns for the year 1889 give no account of any case of typhoid fever, the only cases of zymotic disease being one of membranous croup, and one of diphtheria, and a few extremely mild cases of measles. Defects of drainage, foul ashpits and privies, impure water supplies, &c., were dealt with in a number of instances.

WEST SUSSEX COMBINED (Population, 106,600).—Few large districts can show more satisfactory returns of vital statistics generally than the one of which Dr. Charles Kelly has charge, and his reports are always most complete and carefully compiled. That the locality is unquestionably a healthy one is abundantly proved by the death-rates of the past 11 years, which have always been below the average of rural districts; yet the progressive decrease in those rates must, to a large extent, be credited to the excellent sanitary work of all kinds carried out under Dr. Kelly's advice and supervision. The statistics of 1888 are exceedingly favourable, the death-rate amounting to 13·3 per 1,000, and the zymotic rate to 1·2 per 1,000. Excepting an outbreak of scarlatina at Arundel, there was no very important history of zymotic diseases. The infant mortality was at the rate of 77, against 87, 102, and 88 in the three years immediately preceding. Dr. Kelly examines rather closely the distribution of age and sex in his district, which, differing widely from the distribution which obtains throughout England and Wales, would, if duly considered, reduce the death-rate for the year to 12·7 per 1,000.

Distribution of age and sex.

QUARTERLY REPORTS OF PUBLIC ANALYSTS.

BIRMINGHAM.—The report of Dr. Alfred Hill for the *third* quarter of 1889 deals with 202 samples of food, drink, and drugs. Of these, 6 (or 19 per cent.) of the milks were not of the quality of ordinary cow's milk, while one of the ales contained more salt than is permitted by the Excise. In 8 of the samples of bread traces of alum were found; 5 of the samples of sugar confectionery contained paraffin wax, a perfectly indigestible substance, while to a sample of liquorice a considerable quantity of starch had been added. Six, or half, of the coffees contained an admixture of this substance, with large quantities of chicory. In 2 samples of white pepper a large amount of mineral matter was found, and one other sample of this condiment was adulterated with "poivrette." During the *fourth* quarter of 1889, 286 samples of food, drink, and drugs were submitted to Dr. Hill. Nineteen (or 23 per cent.) of the milks proved to be below the standard of pure cow's milk. In 14 cases water had been added, and in two others cream had been abstracted; while in three instances both methods of adulteration had been employed. Twenty of the samples of so-called butter were really margarine. A number of them were bought under the "Margarine Act," and were declared margarine, but, contrary to the provisions of the Act, were not so labelled. The single sample purchased as margarine was also not properly labelled. Three of the samples of sweet spirits of nitre were much below the standard of the British Pharmacopœia; while one of ales contained an excess of salt. One of the samples of pepper was adulterated with mineral matter, and one of the cayenne peppers with woody fibre; a so-called sample of saffron contained only one-fifth of the article asked for. The samples of the remaining articles in the list were genuine, or nearly so.

Butter and margarine.

Nitre.

Pepper.

KENSINGTON.—During the year ended March 1889, 497 samples of foods and drugs were submitted for analysis to Mr. Charles E. Cassal by the Inspectors of this parish. Milk, as usual, constituted the largest proportion of them. Of 216 samples of milk analyzed, 20·84 per cent. were found to be adulterated, and 14·81 per cent. inferior, whilst in the preceding year, the percentages were 27·07 and 14·41 respectively. Butter, lard, black and white peppers, cocoa, and spirits, were the other commodities which had been tampered with to the greatest extent. One of the samples of lard was adulterated with cotton-seed oil to the extent of 20 per cent. In 3 other samples there was a considerable percentage of beef fat. The exposure which resulted in consequence of the detection of these adulterants seems to have had an effect in checking the practice.

Milk.

Lard.

ST. GEORGE'S, HANOVER SQUARE.—Commenting on the comparatively small number of samples submitted by private purchasers during the year ended March 1889 (only 2 out of a total of 350), Mr. Chas. E. Cassal remarks how little the public avail themselves of the provisions of the Sale of Food and Drugs Acts. He considers this apathy to be largely due to the unnecessarily cumbrous machinery of the Acts, and to a want of appreciation of the seriousness of adulteration, of the great profits attaching to the practice, and of the serious injury done by it to the honest tradesmen, as well as to the public. As Mr. Cassal remarks in regard to the prosecution of persons for selling adulterated pepper, "the admixture of what appears to be a small percentage of refuse with genuine pepper, may seem to be a trivial offence from the point of view of a single small purchaser. It should be remembered, however, that the Sale of Food and Drugs Act is the only existing check upon those who, through the channels afforded by certain retail dealers, succeed in disposing of large quantities of valueless materials to the detriment of the public generally." As regards the sophistication of milk in this parish, the percentage of adulteration shows a falling off compared with the two preceding years, 30·8 per cent., against 50 and 79·2 per cent. The peppers were of bad quality, and, of 5 samples of cocoa, 4 were grossly adulterated

Private samples.

Apathy of the public.

Evils of adulteration.

Milk.

Pepper.

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Cocoa. by added starches and cane sugar. The samples of drugs (10 of castor oil, and 10 of rhubarb) were of good quality; but some prescriptions which ought to have contained a definite proportion of iodide of potassium, were somewhat too strong, and 1 of bismuth was below the proper strength. The errors were equal to 5 per cent. and 7 per cent., *plus* in the iodide of potassium preparations, and 10 per cent. *minus* in the "liquor bismuthi," calculating upon the weight of the drugs which should have been present.

Drugs.

ST. LUKE, MIDDLESEX.—In a report for the last quarter of 1889 Mr. A. W. Stokes states that the total number of samples analyzed during the year was 131, including of milk 54 samples, of sweets 30, of groceries 15, of butter 11, of spirits 11, of bread and flour 10. Twelve of the samples of milk, 4 of those of butter, and 3 of those of coffee were adulterated. This gives a percentage of 14½ adulterated samples during the year, and shows no improvement on the preceding year. Of separate articles, 43 per cent. of the coffee samples, 36 per cent. of the butter, and 22 per cent. of the milk proved to be adulterated. Mr. Stokes is of opinion that there is very little chance of an ordinary customer getting pure coffee. Besides those undeclared mixtures, the vendors of which could be prosecuted, there is a mass of coffee sold under various grand titles, or in packets, on which the buyer when he has leisure to read the printing thereon, finds in small letters somewhere—"This is sold as a mixture." The vendor hereby is held by most magistrates to be safe, whatever the buyer may have asked for or paid for. Hence, a mixture containing from 70 to 90 per cent. of chicory not unfrequently is sold for "coffee." Coffee and cocoa are the only two articles that may be thus sold to the injury of the purchaser.

Coffee.

ST. MARY, BATTERSEA.—From the limited number of samples of foods, &c., submitted to Mr. Cassal from this parish, it would appear that the proceedings under the Adulteration Acts are not remarkably energetic, though from the high percentage of adulteration detected in 1888, and the serious nature of the majority of the cases, the work of the year cannot have failed to produce a very salutary effect. Of 59 samples of milk, 23 had been tampered with, 1 by the abstraction of fat, and the remainder by the addition of water in quantities varying from 8 to 45 per cent. Of 15 samples of butter reported as adulterated, 14 were certified to be margarine, under the Margarine Act of 1887. They were seized under the provisions of that Act, and each sample consisted chiefly of foreign fat, with one exception, namely, a sample containing at least 50 per cent. of foreign fat. Under the Act a sample containing any proportion of fat other than butter-fat is to be regarded and certified as "margarine," and any margarine exposed for sale without a label is presumed to be exposed as butter. The remaining sample was a butter, which, calculating upon low limits, was adulterated to a comparatively small extent. It was certified as containing *not less* than 5 per cent. of foreign fat. It is satisfactory to note that 9 out of the 10 samples of lard were genuine. The adulteration of lard with cotton-seed oil and with beef fat has been largely practised; the detection of beef fat alone is a matter of considerable interest and importance. Three samples of cocoa were largely adulterated with starches and cane sugar; the peppers contained unduly high proportions of total mineral matter and of silica and sand.

Milk.

Margarine and Butter.

Lard.

Cocoa.

Pepper.

ST. MARYLEBONE.—Mr. A. Wynter Blyth reports that during the quarter ending September 21, 1889, 117 samples of various articles of food and drink were submitted to him for analysis. These comprised dairy produce, condiments, spirits, cocoa, tea, coffee, sweets, lard, and farinaceous foods, all, with the exception of 4 samples of milk, being certified as genuine. In each of the cases of milk adulteration, a prosecution was obtained, and fines of from 10s. to 40s. were obtained. The analyses during the quarter ended December 1889 show an adulteration rate of 6·8 per cent. The articles tampered with were 4 samples of milk, 2 of coffee, and 1 of mustard. One sample of butter was found to be margarine, and a certificate was given to that effect. It was doubtful, however, whether the sample had been sold as butter or as margarine, and hence there was no prosecution.

ST. MATTHEW, BETHNAL GREEN.—Whether from indifference, or (to put a more charitable construction upon it) an insufficient staff, it is clear from Mr. A. W. Stokes's last report that there is a great lack of energy in this parish in enforcing the provisions of the Sale of Food and Drugs Acts. During the quarter ending December 1889, only 13 samples were submitted for analysis, and during the year only 133, a number which in more enterprising districts represents a fair quarter's work. To show how inadequate this is, it may be stated that for every 970 persons in the parish of St. Matthew only one sample was analyzed. Moreover, samples of only five different articles were purchased during the year for analysis, so that many trades were exempt from the operation of the Adulteration Acts. Mr. Stokes states that of the 133 samples submitted to him, 19 per cent. were adulterated; this is rather higher than in the previous year, when the percentage was 14 only. The general average for all London is 11 per cent. Of separate articles, 22 per cent. of the milk samples proved to be adulterated, against 13 per cent. in the previous year; hence milk, on the whole, has deteriorated during the past year. Of the samples of coffee, 50 per cent. contained chicory.

Lax administration.

Milk.

Coffee.

SURVEYORS' AND SANITARY INSPECTORS' REPORTS.

ASTON MANOR (Population, 53,843).—Mr. Benjamin Bolt's account of his year's work is, as usual, very satisfactory, both as regards the direction of his efforts, and the amount accomplished by them. Ordinary nuisances amounted to 1,322, of which 1,290 were abated. A special house-to-house inspection of certain streets, containing 465 houses, resulted in the discovery of many insanitary conditions, all of which were promptly remedied. The number of cases of infectious disease reported and visited was 319, and included scarlet fever, diphtheria, typhoid, measles, &c.; the majority of the infected houses were disinfected, as also were large quantities of bedding and clothing. Milk adulteration is somewhat largely practised in Aston, but Mr. Bolt has been so successful in procuring the infliction of penalties, as to exert a deterrent effect. The other branches of work received careful attention and are duly chronicled.

Milk adulteration.

BURY (Population, 60,000).—Mr. Alfred Wood's first report, for the year ending March 1889, gives a very good account of the sanitary work carried out in this borough. The administration seems to be well planned and fairly economical; the total expenditure during the year in question having been at the rate of 5½d. in the pound on the valuation. Mr. Wood considers that this rate might be reduced if householders would make proper use of their ashpits, which are too often used as receptacles for liquid matter, and for much vegetable and animal refuse, which should be consumed in the "domestic destructor"—the fire. The high rate of mortality from diseases of the respiratory organs seems to indicate an undue pollution of the atmosphere, and closer attention might well be given to this subject, since the table of nuisances includes the abatement of only four cases of needless smoke. The "refuse destructor" did good

Careless householders.

Misuse of ashpits.

"Domestic Destructor."

Cost of public "Destructor." work, and at the lowest cost that has been reached since its erection—1s. 1¾d. per ton. The average burning was 25 tons 2 cwts. per day of 24 hours. The supervision of lodging-houses, slaughter-houses, &c., was effectual in maintaining them in good condition. It is, therefore, the more to be regretted that a similar procedure should be wanting in the case of dairies, cow-sheds, and Dairies, &c. milk-shops, which, though duly registered, had not yet been visited owing to insufficiency of the staff. Mr. Wood has begun well, and another year will doubtless see many improvements in the extent of his work.

GATESHEAD (Population, 65,803).—The report of the sanitary inspector for 1889 shows that a very large amount of work is necessary in order to maintain a good sanitary condition in Gateshead, and it also shows that Mr. Jones is doing his utmost, not only to maintain the standard, but to bring about improvements. In the abolition of the insanitary middens he has Middens. been most successful, for, during the last two years, no less than 546 have been replaced by covered ashpits. These in turn are subjected to a close supervision to guard against structural defects. In the list of nuisances dealt with, choked drains form a rather large item. Mr. Jones states that at Drains. least half the number are caused by sheer carelessness; all kinds of things, from children's toys to scrubbing brushes, flannels, &c., being allowed to get into the drains, regardless of the inconvenience or danger incurred. A large number of defective "D" and "Bell" traps were removed and replaced by properly trapped earthenware gullies, and 125 sink waste pipes were disconnected. The inspection and cleansing of tenement premises was an im- Tenement dwellings. portant feature of the year's work, and as many as 276 yards found in a dilapidated condition were cemented and repaired. The work in connection with zymotic disease was not specially heavy, but the promptness with which the cases were visited, and the necessary precautions taken, had no doubt their due effect in preventing a further spread of disease.

HASTINGS (Population, 57,176).—The work carried out in this borough under the supervision of Mr. W. C. Inskipp during 1889, was such as must tend to improve the public health, as well as to check the development and spread of infectious disease. The small prevalence of zymotic sickness and the consequently small amount of labour entailed thereby, enabled the accomplishment of valuable improvements in matters of drainage and water supply. A number of drains were Drainage. tested, and many house drains altered, the object being to get the soil-pipes fixed outside on external walls of buildings and the ends of smaller waste-pipes turned outside into the open air. Many ashpits have been supplied, besides other sanitary improvements, such as airtight inspecting chambers, and better ventilation provided, &c. Cases of Over-crowding abated. over-crowding were discovered in 9 houses, and were ordered to be abated, and 28 houses and rooms were cleansed and limewashed, in addition to 25 fumigated on account of infectious diseases.

KIDDERMINSTER (Population, 26,000).—Mr. John T. Cowderoy has given a good account of the work of 1889, and his report evinces a close attention to his duties and a satisfactory result therefrom. He points out, however, that at least four-fifths of the year's inspections have been devoted to keeping the borough from getting worse than it was, and that in the abatement of nuisances, the greater part consisted of enforcing repairs and cleanliness. "The higher the standard obtained in this direction the more work and effort are required to keep up that standard." The number of cases of infectious disease received into the borough hospital Hospital. was 109, including scarlet fever, typhoid, and diphtheria. Of this number 9 were admitted from the rural sanitary district, arrangements having been made for their reception at the same rate of payment as charged to the guardians. This arrangement cannot fail to be of great advantage to both authorities.

There were 9 outbreaks of swine fever, but Swine fever. affecting only 11 animals, and the usual precautions had the effect of preventing the Glanders. spread of the disease. One case of malignant glanders came also under notice. Disinfection was thoroughly carried out, and all infected houses were required to be cleansed.

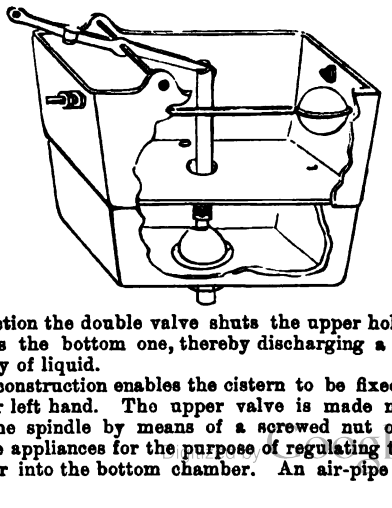
LEEDS (Population, 357,449).—The summary of work during the year ended August 1889, is a very good one, and comprises a fair amount of structural improvements, though none of any magnitude. The routine of inspection comprised 44,982 visits to houses, 2,903 being on account of infectious disease; 2,939 to furnaces, for the control of the smoke nuisance; 5,560 visits to 129 slaughter-houses; 1,012 to cow-sheds and milk-shops; 201 to canal boats; 525 to lodging-houses, &c. The number of nuisances abated was 14,942. The work of Conversion of privies. converting privies is being proceeded with, but as yet this form of convenience out-numbers all others in the borough, the ordinary water-closets coming, however, very closely up to it. The destructors consumed 16,401 loads of rubbish, Refuse destructors. or, on an average, 66 tons 1 cwt. per day during 279¼ working days. The pollution of the river Aire seems to continue, the towns and villages above Leeds being apparently the greatest Pollution of River Aire. offenders. The Sanitary Committee of Leeds express their opinion that "the time has now arrived for energetic action to be taken by the council of the borough against those offenders." Those who have any knowledge of the condition of the river will not hesitate to endorse this opinion. (See page 417.)

ILLUSTRATED SANITARY PATENTS.

2,134. (1889.) IMPROVEMENTS IN WATER-WASTE PREVENTORS FOR WATER-CLOSETS AND OTHER PURPOSES. HENRY ENOCH, 30, Hatherley Street, Cheltenham. [6d.]

This invention has for its object simplified constructive and noiseless action.

An ordinary cistern has fixed within it a horizontal division, thereby dividing it into two chambers or compartments. A hole is cut in the bottom of the cistern and also in the horizontal division, an upright spindle is provided to work therein with a double valve formed upon it (working in the apertures), the bottom valve fitting the bottom hole, and the upper valve fitting the upper hole. See Fig.



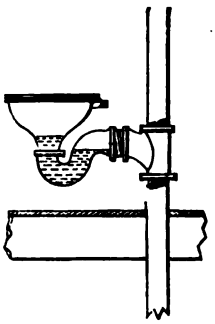
In action the double valve shuts the upper hole while it opens the bottom one, thereby discharging a certain quantity of liquid.

The construction enables the cistern to be fixed either right or left hand. The upper valve is made movable upon the spindle by means of a screwed nut or other suitable appliances for the purpose of regulating the flow of water into the bottom chamber. An air-pipe is also

employed, one end of which is made secure to the horizontal division, the other end being carried to the top of the cistern and fitted with a tap or any other suitable appliance for the purpose of regulating the passage of the air from the lower chamber; by this means the filling of the lower chamber with liquid can be regulated to any given time. It is claimed that by this invention that any cistern divided into compartments can be regulated to discharge any quantity of liquid in any given time.

2,862. (1889.) IMPROVEMENTS IN AND RELATING TO WATER-CLOSETS AND THE LIKE. HENRY HARRIS LAKE, Southampton Buildings, E.C. [6d.]

This invention is designed to improve the construction of water-closets, urinals, and the like. A water-closet bowl or pan of any suitable form is provided having a screw-threaded portion upon the lower extremity thereof, adapted to fit into a correspondingly internally screw-



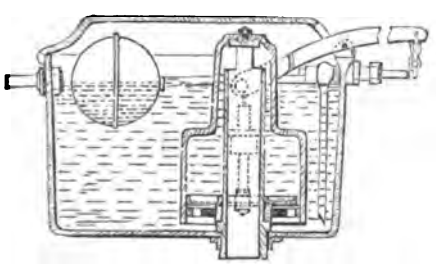
threaded socket provided upon a suitable S or half S pipe or trap. The said S or half S pipe or trap is also provided with an internally screw-threaded socket upon its other extremity, and is connected to another similar socket upon a Y-shaped branch or connecting-piece by means of a correspondingly screw-threaded branch pipe or nipple. The said Y-shaped branch or connecting-piece is connected to the drain or soil-pipe by means of internally screw-threaded sockets, or in any other suitable manner.

As a variation of this invention, the water-closet bowl or pan can be provided with a screw socket to fit on to the screwed end or extremity of the S or half S trap or pipe; and the connection between the S trap with the Y-shaped branch can be modified in like manner, or a T piece can be employed, or any other suitable connection instead of the Y-shaped branch, according to the exigencies of special cases.

Claim.—The combination of the water-closet or other bowl or pan, the trap and the Y-shaped branch all connected by screw-threads as described.

3,700. (1889.) IMPROVEMENTS IN FLUSHING CISTERNS. JOB DEELEY, Phœnix Works, Holloway Head, Birmingham. [8d.]

This invention relates to that type of flushing cisterns, in which a bell and stand-pipe remain stationary, with a plunger working around the stand-pipe and within the interior of the bell which surrounds the stand-pipe other than at its extreme lower end.



The stand-pipe, whose upper and pierced end stands above the top of the cistern, is made stationary with the flush-box, whose bottom surrounding the stand-pipe is sunken or made into a shallow well of a little larger diameter than the lip or lower end of the bell.

The bell, whose inside crown part is affixed to the top of the stand-pipe, is of greater diameter at the lower part than the upper part (see Fig.), and within the said lower part a plunger, with an excentrically disposed rod, works. The lower part of the bell is of such greater diameter than the upper part, that the plunger rod works through the top or crown part of the enlarged part, and is there connected by a link to the inner end of the lever fulcrumed to a bracket made on the top side end of the flush-box or cistern casing, so that by the pulling down of the said lever the plunger which surrounds the stand-pipe, and works within the enlarged lower part of the bell, is raised, and the water above it elevated to the top of the stand-pipe, which thereby gives the starting to the flush which removes the air and creates a partial vacuum in the down pipe; so that the inside pressure, not being counter-balanced by that of the outside, the water in the cistern is forced up the interior of the bell, down the stand-pipe, and from thence to the closet.

Claim.—The combination of the parts as described.

9,569. (1889.) IMPROVEMENTS IN WATER-PURIFYING APPARATUS. HENRY CARROD, 81, Chelsham Road, South Croydon. [8d.]

This invention has for its object to provide a simple and efficient apparatus for use in the purification of water, which consists of a lower vessel being that in which the purification of the water is effected. This vessel has attached to its sides receptacles for deposit. These receptacles extend upwards to near the underside of a horizontal deflector or baffle plate, which extends across the vessel to such an extent that at each side it leaves a space above the aforesaid receptacles and between itself and the sides of the vessel.

The reagent tank is above this vessel, and between the said reagent tank and the vessel are tanks, one for receiving the reagent from the tank above, and the other for receiving the water to be purified, the water and reagent passing together out of these tanks and down a stand-pipe which opens at the lower part into the purifying vessel below the receptacle and baffle plate aforesaid, the opening being preferably presented downwards. The water and reagent pass together upwards in the said vessel, and then between the tops of the receptacles and the underside of the baffle plate, and then between the edges of the plate and the sides of the vessel (through any suitable filtering medium if desired) to the outlet for the purified water from the vessel.

The level of the liquids in the tanks can be maintained or controlled by ball valves, operated by floats or by equivalent devices.

Claim.—The apparatus described in the above-quoted specification.

15,646. (1889.) HOUSE REFUSE DESTRUCTOR FOR SUCH AS FISH, VEGETABLE AND OTHER SIMILAR SUBSTANCES. WALTER TUPPER, 72, Gloucester Road, Kew, Surrey. [6d.]

The apparatus of which this invention is the subject can be used in conjunction with any range, stove, or heating apparatus from which the waste heat and other products of combustion are carried off by draught into a flue or chimney; and consists primarily of a chamber or receptacle so situated in relation to the fireplace that the waste heat, smoke, &c., is caused to impinge upon such chamber or receptacle, in which is placed the refuse it is desired to destroy. Around, above, or below this chamber is provided ample flue space to allow of uninterrupted circulation of waste heat, &c., and of the direct contact of the same with the refuse chamber, from whence it passes into the ordinary flue or chimney.

There may be one or more receptacles with passages or flues through or around the same, for the purpose of dividing the body of refuse and to expose the greatest area of surface to the action of the destructive elements carried by the draught. Such divisions may be of any

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suitable materials, upright or inclined in position for the object of increasing the efficiency of the operation, by acting as checks or favouring the current, and may be grated wholly or in part. The front of the apparatus may form a substitute for skirting in the ordinary range. Proper feeding and inspection doors, covers, or shoots are provided.

In operation the work of destruction commences and continues from the time the refuse is placed in the chamber, the draught passing by its flue or flues around or through same into the common flue, all of which flues are under control by dampers. In addition to destroying the refuse, the coarser particles escaping in the smoke, &c., from the fire are arrested and more completely destroyed, and so, to a certain extent, a "smoke consumer" is obtained by this invention.

The contents of the destructor are reduced to an ash of so small bulk as not to appreciably increase the amount of cleanings from the flue to which it is connected, or require any special provision for its removal beyond the flue space, which, in ordinary cases, will be below the bottom grating of the receptacle.

In all ordinary cases a small destructor chamber can be arranged in the otherwise unused space at the back of skirtings, or covings in "set" ranges sufficient for the purposes of this invention.

Claim.—The destructor chamber as generally described and illustrated in the above-quoted specification and the variations and modifications therein alluded to.

LIST OF APPLICATIONS FOR PATENTS

RELATING TO SANITATION.

FROM FEB. 3 TO FEB. 28, 1890.

[*This List is specially compiled for the* SANITARY RECORD *by Messrs. Rayner & Cassell, Patent Agents, 37, Chancery Lane, Holborn. from whom all further information relating to Patents may be had on application, gratuitously.*]

February 3.—No. 1,789. THOMAS THOMAS, 13, High Street, Taibach, Port Talbot, Glamorganshire. An automatic flushing syphon.

No. 1,795. WALTER WILLIAM ROFF, 22, Downshire Hill, Hampstead, London. An improved form of water-closet, called the "Per se valve closet."

No. 1,816. GEORGE W. EWENS, 24, Southampton Buildings, London. Improvements in purifying the sewage of cities and towns, and foul waters discharged from breweries, tan-yards, glue works, and other description of manufactory.

February 4.—No. 1,876. CLEMENT BURGESS BROAD & GEORGE HARRIS, 4, South Wharf, Paddington. An improved locking manhole cover.

No. 1,946. JOSEPH WRIGHT, 47, Lincoln's Inn Fields, London. Improvements in apparatus for softening, purifying, and filtering water.

No. 1,970. GEORGE SELLARS, 15, Regent Street, Barnsley. Improvements in pressure filters.

No. 2,008. RICHARD BROWN EVERED & NICHOLAS COLEMAN, 45, Southampton Buildings, London. Improvements relating to the flushing of drains, water-closets, and the like, and to apparatus therefore.

February 8.—No. 2,071. JAMES FAGAN, 8, Low Street, Keighley, Yorkshire. Improvements in ball-valves, applicable for use in connection flushing cisterns, or for other purposes.

February 11.—No. 2,206. ERNEST DALBY REEVE, 4, South Street, Finsbury, London. Improvements in washing and drying machinery.

No. 2,238. CHARLES WESLEY DOUGHTY, 77, Chancery Lane, London. An improvement in the means and proportions of materials used for the deodorization, evaporation, and to a certain extent decomposition of human excrement, and its transformation into a nearly inodorous and valuable fertilizer.

February 14.—No. 2,458. JOHN DOWNTON, 19, Southampton Buildings, London. New or improved combined water-motor and sewage-pump.

February 17.—No. 2,538. JOHN PHILIP ACOCK, 103, Studley Road, Forest Gate, Essex. A sanitary dust-bin and cinder-sifter.

No. 2,542. FREDERICK BIRD, 53, Chancery Lane, London. Improvements in sewer ventilation columns or shafts.

February 18.—No. 2,818. GEORGE KIEFER, 8, Quality Court, London. An improved dust-collector and steam trap.

No. 2,910. SQUIRE GREGSON, 8, Quality Court, London. Improvements in and relating to washing machines.

February 26.—No. 3,033. EUGENE DAVID BUSH, 70, Market Street, Manchester. Improvements in and connected with urinals.

No. 3,075. GEORGE HENRY LIGHT, 323, High Holborn, London. Improvements in the construction of intercepting traps for drains and the like.

February 28.—No. 3,221. WILLIAM HENRY HAWKINS, 4, South Street, Finsbury, London. Improved flushing apparatus for water-closets.

SPECIFICATIONS PUBLISHED.—1889.

5,916. BARR. Sluice valves. 6d.
6,411. HILLS. Disinfectants. 6d.
7,012. LAKE (Hollander & Vinker). Testing pipes. 6d.
19,900. THOMPSON (Smead). Dry-closets. 6d.
2,867. MARCH. Sweeping refuse from streets, &c. 6d.
2,862. LAKE (Durham). Water-closets, &c. 6d.
3,040. JONES. Washing machines. 8d.
4,394. NUNN. Controlling the supply of flushing liquid to closets. 11d.
5,835. SHANKS. Flushing water-closets. 8d.
2,537. SHILTON. Disinfectant. 4d.

The above Specifications may be had from Messrs. Rayner & Cassell, Patent Agents, 37, Chancery Lane, at the prices quoted.

LAW REPORTS.

CHESTER CONSISTORY COURT.

ATTEMPT TO RE-OPEN A VAULT.

CHANCELLOR ESPIN has given his decision on an application which was made to this court. Mr. Thomas Green, a large owner of property at Bebington, is the owner of a vault under the chancel of Bebington Church. In April 1888 his son died, and was buried in St. Chad's Churchyard, Claughton, in the diocese of Manchester, and wishing to have the body transferred to the vault (now closed) at Bebington, the father obtained last April a faculty from the Bishop of Manchester for opening the grave at St. Chad's and exhuming the body. It was necessary, however, to obtain a faculty from the Chester Court, for the opening of the vault. The case came before the court on the 6th, the 27th, and the 28th of November, when his Worship intimated he would take time to consider his judgment. Mr. Proctor Fletcher appeared for Mr. Green, and Mr. Alfred Sington, Hon. Counsel to the Church of England Burial Reform Association, for the opposers of the application.

Chancellor Espin, in dismissing the application with costs, said:—"The court must absolutely refuse to authorise the works for which its sanction is requested. Interment within the walls of places of worship is altogether opposed to the spirit and tenor of recent legislation, and of modern sanitary science, and in this particular case is strongly objected to by the parishioners."

LIVE ANIMALS AND WARRANTY.

A judgment of importance to the cattle trade has been given in the Liverpool County Court by his Honour Judge Collier. The case was one in which a Sheffield butcher named Hides sued Verdon and Cullen, cattle salesmen, of Liverpool, for £12, the price of a cow which he bought from them last September. The cow was purchased with four others in the Liverpool Cattle Market, and on being killed and dressed was found to have suffered from tuberculosis, and was destroyed by order of the Sheffield local authorities. For the plaintiff it was contended that there was an implied warranty, while the defendants argued that it was sold in open market without warranty, and that by the custom of the trade the vendors had no responsibility. Judgment was given for the defendants, his Honour stating he found that at the time of sale the flesh was unfit for the food of man, but on the

evidence he did not find that Mr. Cullen at the time of the sale had any definite knowledge that the animal was intended for food. His Honour thought that to establish an implied warranty of fitness it must be conclusively made out that it was brought to Mr. Cullen's knowledge that the animal was being sold to be converted into food and for no other purpose. If it were sold to sell again, with no definite knowledge of its ultimate disposition, there would be no implied warranty of a fitness of food. On that ground, therefore, he thought that the plaintiff had failed to make out his case. He was further of opinion that the rule that, if a person sells a commodity for a particular purpose, he must be understood to warrant it as reasonably fit and proper for such purpose, is not applicable to living animals, and it never had been held to be so applicable as far as his knowledge went.

A Milk Case Appeal.

This was an appeal, heard at the Reading Borough Quarter Sessions, from the decision of the borough justices, convicting Messrs. Lush, farmers, near Basingstoke, of sending adulterated milk to Mr. Lumsden, dairyman, Reading.

Mr. David (instructed by Mr. Sidney Brain) appeared for the appellants, and Mr. A. H. Spokes (instructed by Mr. F. Stevens, solicitor, Assistant Town Clerk), for the Reading Sanitary Authority.

Mr. Spokes for the sanitary authority, stated that the Legislature felt that the Sale of Food and Drugs Act, 1875, was not sufficient protection to the retailer of milk in towns, who knew nothing about the milk which he received from some farmer in the country, and an Act of Parliament was therefore passed in 1879 to remedy that state of things. Any inspector of nuisances or officer having charge of the execution of the Act could procure a sample at the place of delivery and take proceedings, where the article was sold or actually delivered to the purchaser, which was in this case at Reading Station. He quoted a decision of Mr. Justice Field, that it was the intention of the Act to hit the person who sent the milk from the country. He stated that the contract was made in March, 1889, and the milk was delivered at Basingstoke till August 11, when part of it was sent to Reading. On September 11 directions were given to send the whole of the milk to Reading. His learned friend was going to rely on the technical rule that the railway company were agents for the consignee. This case was exactly like the case of the delivery of milk from Coventry to Euston Station, in which nobody suggested that the delivery was at Coventry, and not at Euston Station, and the Court dealt with the case as if the milk were delivered at Euston Station.

Mr. Lumsden, milkseller, Minster Street, Reading, and Vine Dairy, Basingstoke, said that in March, 1889, he made a verbal contract with Mr. Thomas William Lush and Mr. Duncan Lush, farmers, Basingstoke, to deliver milk at two prices to Vine Street, Basingstoke, for twelve months. From September 11 the milk was sent to Reading Station. On September 13 witness sent a telegram to his manager to send Lush's milk that day but no more. He contracted to purchase the whole of the milk from Messrs. Lush's farm.

Edwin Perkins, manager to Mr. Lumsden at Basingstoke, proved that the delivery of the milk was first at Basingstoke. He sent a note by Messrs. Lush's man, North, to send the milk to Reading Station. He afterwards had a conversation with one of the Messrs. Lush, and after August 11 some of the milk was sent to Reading, and the youngest Mr. Lush sometimes delivered it at the Basingstoke Station. Witness supplied the labels to put on the churns by Messrs. Lush or their men. On September 13 witness received the telegram alluded to, and sent it to Mr. Lush after their men had been to the Basingstoke Railway Station with the milk. The answer of Mr. Thomas Lush first was that they were willing to deliver anywhere in Basingstoke. They were willing afterwards to take the milk to Basingstoke Station to go to Reading Station. He could not refer to any specific interview after that, but he knew there were several. He never took any milk out of the churns at Basingstoke Station. They never objected to take the milk to Basingstoke Station.

David North, in the employ of Messrs. Lush, said that on September 13 he took two churns from Messrs. Lush's farm to Basingstoke Station. Mr. Thomas Lush put the labels on the churns at the farm. Witness took the churns out of the cart and put them on the platform, told the porter, and he booked them. Witness saw the milk put into the train by the porter. Neither Mr. Perkins, nor Mr. Lumsden, nor any of his men were at the station. Witness took the milk to the Vine Dairy and to the station at Basingstoke when it was required. Witness met Mr. Perkins about half a mile from the station and received from him the telegram referred to. The milk was under his sole charge at the farm and up to the time he got to the station. He did not put anything in the milk. The churns were fastened down but not locked. They could have been opened by anyone, but it would have taken some time in doing it.

Alfred Vicars, parcels' porter at the Basingstoke Station, corroborated the last witness, and said the churns were near the office door, and no one could have put anything into them without being seen.

Mr. W. H. Roberton, Inspector of Nuisances at Reading, proved taking a sample of milk from one of the churns when they arrived at Reading, and submitting the sample to Dr. Ashby, the public analyst. He did not deliver any portion of the sample to Mr. Lush.

Mr. Wright, manager of Mr. Lumsden's Reading depôt, gave corroborative evidence, and said he took the milk away from Reading Station.

Dr. Ashby proved that the milk was adulterated with not less than 18 per cent. of added water. He took a standard which would provide against all contingencies, such as poor cattle and poor land. The milk was not like skim milk or natural milk. It was like milk with water added to it.

Mr. David submitted that the place of delivery was Basingstoke and not Reading; that the contract for delivery was at Basingstoke, and that there had never been any variation of the contract, and that the delivery took place and was completed at Basingstoke. The inspector should have given one of the samples to Mr. Lush.

Mr. Spokes replied on the case, and submitted that a sample could not be taken at Basingstoke Station.

The Recorder said he was clearly of opinion that the conviction should be supported, because it properly came within the terms of the Act. He confirmed the conviction, and ordered the appellants to pay the costs of the appeal.

Mr. David asked for a case upon the point of delivery.

The Recorder said he would grant one if he thought there was any doubt upon the point. He had considered that point, and could not think there was a shadow of a doubt, and being of that opinion, he should stultify himself if he granted a case.

POLICE COURT CASES.

SALE OF FOOD AND DRUGS ACT (1875).

Milk Adulteration in Hereford.

The following cases were heard by Mr. Shellard and Mr. Morley, at the Hereford Police Court. Moses Beaumont, James Sisum, Thomas J. Quarrell, R. Pollard, George Devonshire, and Joseph Prosser, all milkmen supplying the city, were charged under the Food and Drugs Act with having sold adulterated milk.

Mr. Akerman (instructed by Mr. Taylor, inspector under the Food and Drugs Act) prosecuted; and Mr. Garrold defended the defendant Devonshire.

The charge against Devonshire was first heard.

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Mr. Akerman said that these were the first cases of the kind that had been heard in the city, and he would draw the attention of the Bench to the careful way in which the inspector had carried out the provisions of the Act. He then spoke of the necessity there was that the milk supplied should be pure, a great quantity of course being used in the Infirmary and other institutions.

The Inspector under the Food and Drugs Act, Mr. James Taylor, said that on December 9 he received instructions from the Sanitary Committee to take samples of milk; on December 9 he met the defendant in Green Street in the course of his delivery and asked for "half a pint of new milk;" P.C. Ovens was present; the defendant measured half a pint out of his can; witness then asked the defendant to accompany him to an adjacent shop, which he did, and the milk was sealed up in three bottles; witness told the defendant that the milk was to be sent to the public analyst; one bottle was sent to the public analyst (Dr. Bostock Hill), the second he retained, and the other he gave to the defendant; the analyst's certificate stated that the milk had been adulterated with 20 per cent. of "added water."

Mr. Akerman here put in a certificate, and was about to identify it with the milk bought off the defendant, when Mr. Garrold objected, observing that the certificate might apply to any of the other defendant's milk.

The Magistrates' Clerk (Mr. James Davies) asked if the certificates were the same now as when received from the public analyst, nothing being added, and the Inspector replied in the affirmative.

The witness Taylor being cross-examined by Mr. Garrold, said that the defendant Devonshire told him he bought the milk of Mr. Bott, of Breinton, and that he sold it as he received it; witness did not trouble to ascertain whether Mr. Bott sold his milk purely; witness knew that the lactometer was used by milkmen, but he did not think it was necessary for him in this case to take enough milk for such an instrument to be used—he conformed with the analyst's rules; witness did not know that milk was poorer at this time of the year than any other.

Mr. Garrold said it was unfair that the analyst should use such a quantity that the defendant himself had not a chance of testing it.

The Town Clerk (Mr. J. Carless, jun.) proved the instructions to the inspector. No specific instructions were given for samples to be taken from the six defendants; the inspector was to use his own discretion as to whom he took the samples from.

P.C. Ovens corroborated the inspector's evidence.

Mr. Garrold said the Act of Parliament provided that if a man bought milk from another person and sold it as he received it, believing it to be pure, he should be absolved from any prosecution; and Mr. Devonshire sold the milk in precisely the same quality as he received it. He contended, therefore, that there was no case against the defendant.

The defendant said he and his lad poured the milk out of Mr. Bott's tin into his own, which was perfectly dry, and they proceeded at once to serve the customers, supplying it in exactly the same condition as he received it; there was no ground for saying that he added any water to it; he thought it was genuine milk, or he should not have retailed it out; when he got home he tested the remainder of the milk and found it did not register "milk."

By the Bench: The milk retailers generally relied on the wholesale dealers, and did not as a rule trouble to test the milk.

The Magistrates: The full penalty was £20, but in this case the mitigated fine of £1 only and the costs would be imposed.

Mr. Garrold asked if the Bench would give an expression of opinion as to whether they believed Mr. Devonshire sold the milk as he received it.

Mr. Shellard: We give Mr. Devonshire credit for the facts he has stated.

The defendant: Do I leave this Court without a stain on my character?

Mr. Shellard: As far as the Bench are concerned we don't dispute your statements. Your evidence was satisfactory to us; but it is a question of law.

In the case of James Sisum Mr. Wallis appeared for the defence.

The Inspector said he took a sample of milk from this defendant also on December 9; it was sealed up in three bottles, and treated as in the previous case.

Mr. Wallis observed that Mr. Sisum had only been guilty of a technical error, and he objected to the certificate in this case because there was an error in it. He did not see why the public analyst should be excused more than anyone else. He had given a certificate about a Mr. "Sisoom's" milk; his (Mr. Wallis's) client's name was Sisum.

Mr. Shellard: I can soon remedy that if you will allow me.

Mr. Wallis: But I am not going to allow it. In the summons it is "Sisom," in the certificate "Sisoom," and in the minute-book of the Corporation "Sisum." I appear for Mr. Sisum, not "Sisoom." You can correct a summons no doubt, but they could not correct a certificate. I ask you to say—and I am prepared to take a case in the Queen's Bench—that that certificate does not represent the person summoned.

Mr. Shellard: It is evidently a little carelessness on the part of the copyist.

Mr. Wallis (to the defendant): Are you Mr. Sisoom?

The defendant: No, I am not.

Mr. Shellard said there could be no doubt that the certificate applied to the milk supplied by the defendant.

A note was taken of Mr. Wallis's objection, but it was decided to go on with the case.

The certificate was then read, and showed that the defendant's milk had been deprived of 20 per cent. of its "fat."

Witness sent the samples to the analyst by insured parcels post, but he had not got the insurance counterfoils.

Mr. Wallis contended that according to the wording the samples ought to have been sent per "registered letter."

An objection on the point was noted.

Witness told Mr. Sisum what he wanted the milk for after the purchase had been completed. The tin out of which Mr. Sisum supplied the milk was from half to three-parts empty; witness was aware that the cream came to the top, but he did not know that the constantly dipping of the cups into the can deteriorated the quality of the milk.

Mr. Wallis, in addressing the Bench, said the milk in this instance came from Mr. Bevan, of Holmer, and was retailed within five minutes after having been received. It was a peculiar thing that the corporation should have been asleep so long, for the Act had been passed 14 years, and this was the first time it had been sprung upon the milk-sellers in Hereford. He contended that Mr. Sisum had only committed a technical error, and he did not see if a technical error on the part of the public analyst should be excused any more than a technical error on the part of a milk-seller.

The defendant was then sworn, and said he sold the milk in the same condition as he received it.

The Magistrates said they did not for a moment doubt the facts as stated by Mr. Sisum, but the Magistrates were to a great measure bound by their decision in the previous case. A fine of £1 and costs would be imposed.

In the case against Joseph Prosser, the Inspector said he purchased the milk of the defendant in Clive Street after he had just served a person; the certificate of the analyst stated that the adulteration was 10 per cent. of "added water."

Defendant said he brought the milk straight from the farm, Mr. Thorne's, of Holmer.

Fined 10s. and costs.

Raymond Pollard was then put in the defendant's box.

Mr. Akerman said that in this case the milk had not only been adulterated, but the defendant behaved in a very shifty manner. He therefore pressed the charge.

The Inspector said he purchased the milk on December 10; the defendant did not wish to serve him out of the tin from which he had been supplying; witness, however, persisted in having it from that particular tin, and the defendant then said it was "skim" milk and not "new" milk.

Mr. Akerman said that, as a matter of fact, the milk was sold and bought as "skim" milk, but unfortunately the analyst's report said that "water" had been added.

The Inspector (continuing) said the analyst certified that the milk was adulterated by 32 per cent. of "added water."

Cross-examined: The defendant did not ask the inspector whether he wanted skim or best milk.

P.C. Ovens corroborated.

Defendant said he sold his milk as he received it; he had not been selling long, did not think he should be required to test the milk himself, and trusted to the farmer as to the quality.

Fined 30s. and costs.

In the case of Moses Beaumont, the Inspector said he also purchased the milk in this instance on December 10; the adulteration was 13 per cent. of "added water."

Fined 10s. and costs.

The last case was that against Joseph Thomas Quarrell, and in this instance 30 per cent. of "fat" had been extracted.

The Magistrates said this was a worse case than the others, because the defendant himself was the "manufacturer." He would be fined 40s. and the costs.

Saccharin Tabloids.

Nottingham Corporation *v.* **Boot & Co., Druggists.**

In this case, heard before the Nottingham Borough magistrates, a sample of the tabloids was obtained by an inspector of nuisances on the prescription of the medical officer of health, and proved on analysis to contain 75 per cent. of milk-sugar, each tabloid containing about ½ grain of saccharin, and 1½ grain of milk-sugar, with a trace of carbonate of soda. Mr. Harris, who prosecuted, contended that this constituted an injurious adulteration within the meaning of the Act, and one to the prejudice of the purchaser should he require the saccharin as a substitute for sugar in a disease like diabetes mellitus, where sugar acted as a poison. The medical officer of health, Dr. Boobbyer and the borough analyst, Dr. Truman, gave evidence supporting this contention, and alleged that milk-sugar, even in small quantities, could not fail to act injuriously upon the great majority of diabetic patients, for there was no doubt that it underwent conversion into glucose in the body. Dr. Donkin had advised the use of skim milk in diabetes because the advantage of milk as a nutrient agent in his opinion more than compensated for the injurious action of the sugar it contained, but there was no justification for giving milk-sugar as a simple compounding agent where saccharin, the active drug, could either be used alone or made up with harmless material, such as gelatine, tragacanth, or gluten. Mr. Stanger, for the defence, did not deny the adulteration, but contended that the amount of saccharin in each tabloid (½ grain) was a sufficient dose, that some compounding agent was necessary, and that milk-sugar was harmless to diabetic patients, even when given in considerable quantities, and called the following medical gentlemen of Nottingham in support of this view: viz. Drs. Brookhouse, Hatherly, C. V. Taylor, Howitt, Herrick, and Wyatt. The magistrates dismissed the case.

MARGARINE ACT (1887).

A Hardened Offender.

At the Divisional Sessions, Bedford, Frank Stratton, dealer, of Luton, was charged with exposing for sale margarine unlabelled. Mr. Mitchell appeared for the police, and Mr. Clare defended. Defendant, who is about 17 years of age, is the son of George Stratton, who is a large dealer in margarine in Beds, and both of whom were only convicted on a similar charge a month ago (*see* Sanitary Record, January 15, page 354). The principal witness in the present case was Mrs. Cockrell, Spring Road, Kempston, who deposed that on January 2 defendant visited her house, and asked if she wanted any butter. She asked him whether he was selling margarine or butter, and he answered that he was selling "best fresh butter," which he obtained from Ampthill and Luton. She bought half a pound, but saw no label on the basket from where he took the "butter." After he had left witness's husband noticed two letters on the paper in which the butter was wrapped, and on turning it over discovered "margarine" underneath, the name appearing upside down. Her husband then went for the police, and met the lad with the basket, and accused him of selling margarine as butter. Defendant went back to the house and offered to take back the butter, also offering to give her all the butter he had in the basket. The other evidence showed that defendant had a label printed in large letters, but this was placed at one end of the basket, which was not uncovered at the time the purchase was made. There was also a label on the outside of the basket, but defendant contrived to hide this by carrying the basket that side of him. He also admitted that it was he who had recently been convicted. Defendant was fined £10, and £2 3s. 10d. costs. The lad's father paid half the amount, and was allowed time to pay the remainder.

SALE OF HORSE-FLESH, &c., REGULATION ACT, 1889.

At the Reading Borough Bench, before C. Smith, J. Simonds and J. Wilder, Esqs., Frederick Miers, of 36, King's Road, appeared to answer a summons in which the inspector of nuisances complained that he found on certain premises occupied by the defendant horse-flesh deposited there for the purposes of sale or preparation for sale and intended for human food, such premises being other than a shop, stall, or place over or upon which there was no placard certifying that horse-flesh was sold there; the meat having been condemned as such by one of the Borough Justices.

The Town Clerk (Mr. H. Day) conducted the case on behalf of the sanitary authority, and the defendant was represented by Mr. Besley, of the Home Circuit.

Two summonses were issued, and in reply to Mr. Besley, as to which would be taken first, Mr. Day said the evidence he should offer applied to both cases, and he should have thought it would have been convenient to take both at the same time.

The Clerk (Mr. Jones): That is a matter for the defendant.

Mr. Besley said it was quite impossible to take both at once, and with regard to number 1 (the one recited above) he need not trouble himself at all.

The Clerk said number 1 summons was taken out under section 8, which recited what the officers could do, and section 6 recited that if meat were found under such circumstances, unless the defendant proved he was not going to use it for food, he would be guilty.

Mr. Besley said section 8 created no offence but merely gave power to the local authority. The Act itself was one regulating the sale of horse-flesh for human food, providing that wherever horse-flesh was sold or exposed for sale a notice in legible characters was displayed of the fact so as to prevent any intending purchaser of other kinds of meat being supplied with horse-flesh. Beyond this there was no offence whatever under the statute.

Mr. Day said that section 5 provided that in the case of the horse-flesh being seized the person on whose premises the meat was found would be deemed to have committed an offence unless he proved that it would not be used for food.

Mr. Besley said a person might sell horse-flesh for human food if he had a placard up and if he called it horse-flesh, and it was absolutely no offence to do so.

Mr. Day said it would be shown in evidence that horse-

flesh was deposited for the purpose of sale or preparation for sale, and was intended for human food. The officer who made the seizure and the justice who gave the order were clearly of that opinion; and then going on to section 5, that clearly laid down that the person under those circumstances, supposing the evidence bore it out, had committed an offence under the Act.

Mr. Besley said section 119 of the Public Health Act gave power for seizure of meat unfit for human food, but this Act regulated what was a perfectly lawful thing—the sale of horse-flesh. He should have thought the second summons would have raised the whole question.

The Bench decided to hear both summonses.

Mr. Day said he should elect to go upon the summons which the learned counsel had objected to (the one appearing above), containing the offence under section 5.

Mr. Day in opening the case said it was true that the sale of horse-flesh was not before the passing of the Act, nor was it now in itself, an offence; nor was he aware that previously there was any regulation with regard to the sale of such material either for human food or otherwise. But this Act having been passed, information came to the medical officer of health and inspector of nuisances that certain transactions, which seemed to be surrounded by circumstances of suspicion and to have taken place with a great amount of secrecy, were happening in connection with the defendant's place of business known as the Reading Charcutery, and that for some weeks or months previous to the day on which this alleged offence was committed large parcels of horse-flesh were being imported into Reading from Oxford under false names and afterwards conveyed to the premises of the defendant, whose business was of a nature to lead to the suggestion that the meat was to be used by him for the purposes of his business. These were shortly the facts of the case. The defendant was the occupier of a shed or building in which the meat was found on December 20; he also occupied 36, King's Road, and adjoining it was the Reading Charcutery in which, in addition to pork, bacon, and such like, were sold a variety of manufactured articles, such as sausages, German sausages, &c.

Mr. Besley said the Town Clerk ought, in fairness to the defendant, to say that no horse-flesh was found at the manufactory.

Mr. Day added that the place where the seizure was made was between a quarter and half a mile away from the manufactory and a little farther from the shop. He then called evidence:—

Mr. A. Wheatley, veterinary surgeon, said that on December 20, Dr. Ashby and Mr. Roberton called upon him with a view to his examining some meat. He went to the defendant's premises in Orts Road and found the meat was horse-flesh. The defendant was present and acknowledged that it was horse-flesh. The defendant asked them to go to the manufactory in King's Road, and told him the meat was for exportation. He showed him the tubs at the factory into which he said the meat was put, after being chopped up and prepared for exportation. The tubs were fastened down, but the defendant said they contained horse-flesh. He said it was used on the table for edible purposes. Defendant made it quite clear that the meat was to be exported and not used here.

Frank Smith, Great Western Railway inspector at Oxford, said that on December 20 last two hampers were delivered at Oxford Station addressed to 36, King's Road (where the defendant lived) in the name of Mr. Strube. They were brought on Mr. Hathaway's horse-slaughtering cart. There were labels on, but he could not produce them.

Mr. Besley said he must see the labels. He was quite prepared to admit Strube was defendant's foreman at Orts Road, but they must show that the labels were put on by the instruction of the defendant before that could be evidence against him.

Mr. Day said it was impossible to produce the labels as they were destroyed immediately the consignments reached Reading.

Witness, continuing, said the hampers were secured by a chain and padlock and were marked "Preserved Meat."

Robert May, cab inspector, in the employ of the G.W.R. Company, Reading, said that on December 20, two hampers arrived by the 9.42 train (from Oxford) weighing 10 cwts. 1 qr. A man and a lad in defendant's employ came for them and put them on a pony van. They were labelled "Mr. Strube, 36, King's Road," and marked "Preserved Meat." He followed the van to the Orts Road, to the defendant's premises, where the baskets were deposited. The van came out in about three-quarters of an hour, and then went to the shop in King's Road. The empty hampers were subsequently sent to the station, addressed to Mr. Strube, 30, Gas Street, Oxford.

Cross-examined: The hampers were not returned but were seized, and were sent back about a fortnight afterwards by the defendant's servants to "Mr. Hathaway, 30, Gas Street, Oxford."

D.S. John Gamble, of the Berks Constabulary, said he saw the hampers arrive. He instructed May to follow them, and he stationed himself in the Orts Road. Eventually he saw the defendant go into the yard and he was quickly followed by the van containing the two hampers. Witness then informed the medical officer (Dr. Ashby) and the inspector of nuisances (Mr. W. H. Roberton). He did not hear the medical officer or Mr. Wheatley say the meat was quite fresh, nor had it been so stated that day. He could not say whether it was; he was not a judge of horse-flesh. The defendant sold sausages, German sausages, saveloys, &c., at his King's Road shop.

Mr. Wheatley, re-called, said the meat was quite fresh.

Mr. William Henry Tompkins, an assistant in the Town Clerk's office, produced the minute book showing the appointment of Mr. Roberton as inspector. His last appointment held good from June 1887 to June 1891.

Cross-examined: There had been no appointment of Roberton since the passing of the Regulation Act (sale of horse-flesh) of June 1889, as inspector for the purposes of the Act. There was no need for it.

Mr. Besley: I differ from you as to there being no appointment needed.

Cross-examination continued: There was no record upon the minutes of ordering the prosecution of Mr. Miers. The urban sanitary authority did not employ D.S. Gamble.

Re-examined: He was aware that he (the Town Clerk) was instructed to proceed in this case, and that was on the minutes. The resolution was passed subsequent to December 20.

William Henry Roberton, inspector of nuisances, said that on December 20 last he received information upon which he applied for and obtained a search warrant to search the defendant's premises, both in Orts Road and King's Road. He was allowed admission at Orts Road stable premises without using it. He there found two large hampers; one was empty and the other was nearly full of meat, while a quantity was also hung up in a shed. He saw the man Strube and he said his master had torn the labels off. Mr. Miers came and admitted that the meat was horse-flesh, and that it had been taken to his premises to be chopped and preserved for export to Germany, where it was to be made into the very best of meat. Mr. Wheatley and the medical officer subsequently condemned it as horse-flesh, and witness seized it under the authority conferred on him by the Act. He brought it to the police station, where it was brought before a Justice of the Peace who ordered its destruction. The flesh was cut exactly in the same way as it came from the "knackers," in long strips without any bone. Defendant's assistants said it had come from Mr. Hathaway, of Oxford.

The medical officer of health (Dr. Ashby) also gave evidence as to being called and finding the meat in the manner described. The meat was perfectly fresh. There was no indication of any sale being carried on on the

premises. At the factory he saw some tubs containing horse-flesh (defendant said so) and that they were to go to Germany.

Mr. Besley, in defence, said that the facts elicited went to show that a terrible mistake had been committed by Mr. Simonds in ordering the meat to be destroyed under the circumstances. There seemed to be all through a great misapprehension of what the law was on the subject of horse-flesh. There was no obligation to destroy, or feed dogs with, horse-flesh if it were perfectly fit for human food and the sale of it made under the name of horse-flesh and at a place where a placard indicated that fact. It was no crime to sell horse-flesh for human food, but they must obey regulations, and it appeared that these proceedings rested on the assumption that because it was horse-flesh it was a crime to sell it. The Act of 1889 had in no way stopped the trade in horse-flesh, but only regulated it—so that a person asking for steak might be positive that he had received such an article—and he was extremely glad that Mr. Miers had been so candid as to explain what the trade really was, because it would obviate the necessity of his calling a single witness, as there was no dispute about the facts. The real facts of the case were these. An order arrived from Gotha for 10 cwts. of horse-flesh, dated December 17 (Mr. Besley handed in the order and also a translation of the same). It was posted at Gotha and arrived on the morning of the 19th. Defendant immediately sent the order to Mr. Hathaway, who in accordance sent the meat on the 20th. It was necessary for it to be dried and preserved, and it was for this purpose it was taken to Orts Road. He contended that it was the intention of the Act of Parliament merely to apply to the food of the people of England, Ireland, and Scotland, and not to legislate for the Germans as to their food; and therefore no offence was committed in sending it abroad, where it was legal to sell horse-flesh in different names. The words "human food" in the Act meant that of the people of this country for whom our laws were made, and not for that of a foreigner, so long as he ate it in his own country. Mr. Besley contended that for the purposes of the Act the inspector and medical officer should have been reappointed; at present they had no powers under the Act. Mr. Besley further explained the Act of Parliament, and argued that the premises in Orts Road, where the meat was seized, were such as it would be unlikely that sales would take place; that the meat had been taken there in transit for preparation for human food, not in this country, but in Germany, was as obvious as anything could be. He contended there was not a title of evidence to show any had been exposed for sale or was intended for food in this country; and he felt it would be a great hardship to stop all business of this kind merely upon a prejudice that some people did not like to see Germans flourishing and getting fat upon horse-flesh. Mr. Besley concluded by appealing for a dismissal of the summons on the grounds that the officers were not duly appointed for the purposes of the Act, and that the Act applied only to food for home consumption and not abroad. He was told, however, that the Town Clerk was not a member of either branch of the legal profession, and therefore was not competent to deal with points of law.

Mr. Day contended that the Public Health Act gave the Town Clerk full powers, and the Bench decided to accept his arguments.

Mr. Day then said he did not know whether the learned counsel was really serious in suggesting that Germans for the purposes of the Act were not human beings, and he did not for a moment think the Bench would accept the argument that the words "human food" were to be limited in any such way. Full admission had been made that the meat was to be used for food; and as to the appointment of the officers, he contended the medical officer and inspector of nuisances were officers forming part of the permanent staff of the Borough, and did not need any such reappointment.

The Chairman of the Bench said that upon the facts there was sufficient evidence for a conviction. They had given very careful consideration to the arguments of the learned counsel, but they did not consider the officers needed reappointment. They imposed a fine of £5 and costs £1 15s.; in default of distress 21 days' hard labour.

Mr. Besley said he supposed the other summons would be withdrawn, to which Mr. Day consented.

The Chairman said they had come to their conclusion as a matter of fact and not of law. In their opinion the flesh was not for consumption abroad exclusively.

PUBLIC HEALTH ACT (1875).—Sec. 116.

Pigs with Swine Fever.

At the Wigan Borough Police Court, before Messrs. W. Roocroft, and W. B. Johnson, William Wilton, landlord of the Shamrock Inn, Scholes, was charged with being the owner of the carcases of three pigs affected with swine fever, and which were found in a wash-house behind the Black Swan Inn, Scholes, in course of preparation for sale, and intended for human food. Mr. A. Smith, the town clerk, prosecuted, and the defendant was represented by Mr. Wilson.

Mr. Leggatt, chief sanitary inspector, said, about 1.45 A.M. on Tuesday, Feb. 18, he visited a wash-house behind the "Black Swan" Inn, Scholes. He found three pigs which had been slaughtered in the wash-house. There was an eruption down the backs of them, they were poor and thin, and were evidently diseased. Witness then went to Wilton's house, and knocked him up, and asked him if the pigs behind the wash-house of the "Black Swan" Inn were his. He replied that they were. He again said yes in reply to the question from witness as to whether all three of them belonged to him. Defendant also admitted that he had instructed a man named Howard to slaughter and dress them. Dr. Barnish and Mr. Sayer afterwards came and examined the pigs, and then witness seized the carcases and informed defendant they were diseased and unfit for food. A magistrate's order for destruction was obtained. The pigs were dressed and hung up by the heels in the usual way.

By Mr. Wilson: At 10 o'clock defendant told him that the pigs were not his, and witness reminded him that it was rather late in the day to say that. The same day he (Mr. Wilson) told witness that the pigs were not defendant's, and that he was labouring under a misapprehension when he said they were there at 2 o'clock in the morning.

Dr. Barnish, medical officer of health for the borough, said on Tuesday, Feb. 18, he visited the wash-house named above and saw the pigs. He came to the conclusion that they were diseased, and thought the disease was probably swine fever. They were unfit for food. The carcases were dressed and prepared in proper butcher fashion.

Mr. Sayer, veterinary surgeon, said he examined the pigs behind the Black Swan Inn, Scholes. From the condition of the carcases he saw they were affected with swine fever. They were unfit for food. When the pigs were alive it could be seen that they were suffering from the disease.

Police-constable Ryan gave evidence as to defendant's admission that the pigs were his. At 1 o'clock on the morning of Feb. 18, he discovered some men engaged in dressing the pigs. He had to knock for five minutes before they would grant him admission to the wash-house. Then information was given to Mr. Leggatt.

Mr. Wilson said he had been instructed to raise two grounds of defence in answer to the summons. In the first place he wished to prove that Wilton was not the owner of the pigs, nor ever was the owner. The people who were responsible were the owners of the carcases or the owners of the premises, and defendant was neither of these. The pigs were not intended for the food of man, and he would bring witnesses who would state that it was decided that if the carcases were not fit for sale the nuisance inspector should be called in in the morning. Wilton had nothing at all to do with the pigs, which were kept by Mrs. Taylor, his mother-

in-law, who was willing to take the responsibility of the action. The pigs were purchased from a dealer of good repute, a man who had had a large experience in such matters. Mrs. Taylor noticed that the pigs were keeping away from their food, and called in the dealer, who recommended that they should be killed, and she foolishly enough consented, and gave orders that it should be carried out, though at what time, and by whose men, she did not state, leaving it to a man named Foy, who looked after the pigs for her. After the evidence of Mr. Barnish and Mr. Sayer, he could not contend that the pigs were fit for food, but Mrs. Taylor did not know that they were suffering from swine fever, and would never have intended the carcases for human food after an examination on the morning after the killing.

Catherine Taylor said she resided with her son-in-law, at the Shamrock Inn. The three pigs kept in the Mill-yard were hers. She bought them from a man named Cafferey, and they seemed to be about three months old, giving £2 5s. each for them. They were warranted sound. Some time since she sent for Cafferey, as the pigs were not eating anything, and he suggested they should be killed. She consented, but did not state any time when it should be done. Cafferey said if they were not fit for sale as food they would send for the "nuisance man" in the morning. If Cafferey had not suggested the killing of the pigs they would have been killed as usual by the pork butcher, who always did it for her.

The defendant was fined £3 and costs for each pig, amounting in all to £10 16s. 6d.

Mr. Roocroft said that it was futile for the corporation to endeavour to make the town as healthy as possible when people of defendant's stamp were indirectly attempting to poison the people wholesale. Both magistrates were of opinion that the meat was intended for the food of man.

Over-crowding.

At Southwark, Mr. Henry Thomas, sanitary inspector of Bermondsey, attended to support an adjourned summons issued against James Eaves, of 1, Napoleon Court, Abbey Street, Bermondsey, for infringing the regulations made by the vestry for the prevention of over-crowding in houses occupied by more than one family. The inspector stated that the house occupied by the defendant was a two-roomed one, without any back ventilation. The defendant and his wife and six children lived on the ground floor, and the first floor was occupied by a lodger who had a wife and five children. The deficiency in cubic space as required by statute was, on the ground floor, 1,269 feet, and on the first floor, 541 feet. The case had been adjourned to give the defendant time to leave the premises, but he had not done so. Since the order had been made another child had been born, which made the over-crowding still worse. The defendant was fined 40s. and 10s. a day for the eight days which had elapsed since the order was made on him to abate the nuisance.

George Etches, of 43, West Lane, Bermondsey, was also summoned by Mr. Henry Thomas, at the instance of the Bermondsey Vestry, for sub-letting a house and not providing the proper free air space as required by statute.—The defendant did not appear, and was represented by his wife.—Mr. Thomas said he was inspector to the vestry of Bermondsey, and specially appointed sanitary officer for the regulation of houses let in lodgings. He visited 43, West Lane, occupied by the defendant. It is a five-roomed house, in which three families—18 persons in all—lived. The back room on the ground floor was occupied by the defendant, his wife, and five children, three of whom were over 12 years of age, as bed-room and living room combined, and there was a deficiency of 1,815 cubic feet of free air space. The front room on the first floor was occupied by a man and wife and three children, with a deficiency of 223 cubic feet; the top front room by a man and wife and four children, one above the age of 12, the deficiency being 728 cubic feet; and the back room on the first floor was used as a bed-room by two men and one child, the deficiency being 166 feet. The rent of the house was 8s per week.—In answer to the charge the wife said she had repeatedly given notice to the lodgers to go out, but they refused, and she had great difficulty in getting her rent. She called as a witness her brother-in-law, who, in reply to a question put by Mr. Thomas, said the lodgers had been in the house for about 10 or 11 months.—Mr. Thomas put in the original order signed by the President of the Local Government Board in the *London Gazette* authorising vestries to put the regulations in force. The officer said the defendant continued to offend 41 days after being served with a notice of non-compliance with the regulations.—Mr. Fenwick fined the defendant 40s. and 2s. 6d. per day—£7 4s. in all, or in default one month's imprisonment.

Contravention of Building Bye-laws.

At Wandsworth, Edward Palmer, a builder, appeared to answer a summons at the instance of Mr. W. H. Whitfield, on behalf of the Wimbledon Local Board, for that he did, in the erection of a certain dwelling house in Effra Road, South Wimbledon, neglect to cause the whole ground surface of such house to be properly asphalted or covered with good cement concrete, rammed solid, at least 6 inches thick; also that he did neglect to cause the east flank wall of such house to be constructed of bricks not less than 8½ inches in length, and to be properly bonded and solidly put together with good mortar. Mr. Whitfield mentioned in his opening address that bats had been freely used in the construction of the house, which was situated near the houses visited by Mr. Biron, Q.C., who remarked that they could easily be demolished with the aid of a toothpick. Mr. Cooper, an inspector of buildings in the employ of the Board, gave evidence as to the quality of the mortar used and the absence of asphalte or cement on the surface of the building. He said he served the defendant with a notice requiring him to remedy the defects, and the work carried out subsequently was a little more perfect in its character, yet it was not by any means satisfactory. The wall had been pointed with good mortar, but the bricks were put together with inferior stuff. Mr. Farman, who defended, elicited from the witness that he allowed nearly two months to elapse before complaining to the defendant of the character of the mortar. He explained this delay by stating that he wished to see whether the mortar would set or not. The Magistrate: Did it take two months to discover that? The witness: Nearly that time. In answer to further questions, the witness said he would have offered no objection to the bats if the mortar had been good. A portion of the mortar was produced, and the magistrate, crumbling it with his fingers, said it would make excellent garden mould. Mr. Santo Crimp, surveyor to the Board, looked at the mortar produced, and said it was rubbish, not mortar at all. The Magistrate: How much would the defendant save in using that kind of mortar? The witness: About £7 a house. For the defence Mr. Farman called Mr. Henry Vellamy, a surveyor, of Cheapside, who said he had inspected the building in the course of its construction. As a surveyor, he was perfectly satisfied with the mortar used and the formation of the wall. In all buildings, he said, there was a certain amount of bats. The magistrate said he understood that bats were old bricks. Mr. Vellamy remarked that old bricks were often better than new ones. His duty was to see that the building was erected solidly, and not whether the bye-laws were complied with. Mr. Whitfield mentioned that he was reluctant to take these proceedings, but he felt compelled to do so in the interests of the public. In a majority of the cases builders complied with the requirements of the Board. The magistrate hoped that the bye-laws would be always rigidly enforced, and said that if the Board showed any mercy it was invariably misconstrued. He fined the defendant £5, with a guinea costs, in respect to the wall, and 40s., together with a guinea costs, for the other matter.

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RAIDS ON ROOKERIES.

At the Thames Police Court, before Mr. Lushington, Mr. Corrie Grant, barrister, applied on behalf of the Mansion House Council for a summons under the Nuisance Removal Act of 1855 and 1860. He proposed proceeding under section 13 of the Act, which gives a justice power to compel an owner to put premises complained about in proper repair, or to order the closing of them until the defects complained about had been remedied. He was instructed by Mr. W. C. Steadman, a large builder, of Rectory Square. Mile End, to take a summons against the owner or occupier of Nos. 3, 5, 7, 9, and 11, Frimley Street, Mile End, for allowing these houses to be in an uninhabitable condition. The houses were in a very dilapidated condition. They were cottages of two rooms, one storey high, with only one window to each room. The staircase led directly from the lower to the upper room. The rooms were low, the walls very damp and dirty, the floor was very bad, and foul air issued from the drains to the living rooms. The water-closet was in a dark and unventilated portion of the passage, separated from the upper room by a very thin partition. Mr. Steadman was called, and said the room in question were not fit for a dog to live in. Mr. Lushington granted the summons.

At the Worship Street Police Court Mr. Samuel Betts, of Mare Street, Hackney, appeared to a summons charging him with allowing the premises 14, Nant Street, Bethnal Green, to be damp, with imperfect drainage, and unfit for human habitation.—Mr. Smith (Rollit & Co.), solicitor, supported the summons.—The complainant, F. J. Lang, said that he was tenant of the house, the defendant being the landlord. Witness had a wife and six children, but had lost one lately. It had had measles, and after that seemed to get a complaint in the head and died. Witness was behind with his rent, about £2 or £2 5s., which was through his being out of regular work. —Mr. Tidman, member of the Council of Architects, deposed to having visited the house. There were two rooms, about 12 feet square. The walls of the room on the ground floor were damp, even close up to the fireplace. The outhouse was only a sort of shed, the tiles of which had never been pointed. It had a brick floor; the rain ran without a gutter, and the whole place was very wet. He found the closet as described. The room upstairs he also found damp, both as to floor and walls. He tested the drains by a "ferret," and detected defects which would let out sewage effluvia. In his opinion the house was quite unfit for habitation, and could not be made fit. There were four houses in that row, and having visited the others he declared them unfit for workshops.—The magistrate having asked if the defendant was the owner of all the houses, the sanitary inspector of the parish was called.—Mr. Weston said that he had been visiting the place for the last two years, and had taken proceedings consequent on work not being done after notice served in April 1887. The defendant was the person proceeded against, but witness understood he was agent for the owners, the Great Eastern Railway Company. In November 1888, on visiting the houses again, he found they had returned to the same bad condition, and served another notice, the premises being again "patched up." He considered that they were not fit for habitation now, and wished to say that if the magistrate made an order to close the house under consideration he (the inspector) would serve notices to close the others.—Mr. Williams supposed the vestry had woke up at last.—The inspector said it was not that he had been visiting the place during two years, but there were 80,000 houses in his district, and he could not do more.—Mr. Williams repeated what he had formerly said—*i.e.* that the responsibility rested on the vestry for not having proper inspection. He had been told by the medical officers of the parish that it was no good attempting to get the vestry to move, and he expressed then his opinion of the matter, but no notice seemed to have been taken of his remarks. He wished to know if it had been decided to take steps to close the other houses?—Mr. Weston said he was authorised to say it would be done.—Replying to the magistrate, the defendant, who said he had done a good deal to the house, denied that he was agent to the Great Eastern Railway Company, though they were the owners. He said he "farmed" the houses from them. They had nothing to do with the places. He thought he held 100 houses under the Company, paying them a lump sum, and he had been doing so since 1868.—Mr. Williams thought he made a very good thing of it.—The defendant admitted he made a little by them, but had to work hard to do it.—Mr. Williams wished to know how the Company became possessed of the houses. — Defendant supposed that they were part of the property which had originally to be taken for the railway, but were what was known as surplus lands.—The Magistrate: Then the fact is that they are houses bought to be pulled down for the railway, but instead of being pulled down these rotten houses are let out to the middleman (like you defendant), and you farm them out to the poor.—Mr. Smith said he understood from the sanitary inspector the defendant was summoned on an average three or four times a year.—The Magistrate asked what was the rent of this place, and being told 5s. a week asked the defendant what he paid the Company. The defendant said he could not tell without examining his books, but he thought about 3s. 6d. for each house. Mrs. Lang was called to prove complaints to the defendant of the state of the house within the past three months, and Dr. Gretton deposed to inspecting the premises, which he found damp and unfit for habitation.—Mr. Williams said he had no doubt the promises ought to be closed, and should make an order to that effect.—Mr. Smith asked for costs, and Mr. Williams ordered defendant to pay £2 2s. costs.

At Worship Street a number of summonses taken out against owners of property in the district for allowing nuisances to exist on their premises by reason of imperfect water supply, stopped drains, damp walls, lack of proper ventilation, &c., came on for hearing, the complainants being in some of the cases "inhabitants" of the premises, and in other cases the sanitary authorities of the parishes. These were represented by Mr. Enoch Walker, vestry clerk for Shoreditch, and Mr. Moss, vestry clerk, and Dr. Paddock Bate, medical officer for Bethnal Green. Mr. Smith represented the Fair Rents League, and Mr. Geoghegan appeared for some of the owners of premises, Mr. Ogle representing the lessee. There were 44 summonses taken out by the parishes in respect of houses owned by a Mrs. Watkin, and leased to a Mr. Chambers. In respect of four out of the number, Mr. Smith said the "inhabitants" complained. Mr. Ogle explained that Chambers ceased to be lessee at Michaelmas last, and he was therefore dismissed from the summonses, his costs being granted him against the Fair Rents League. Mr. Moss, for Bethnal Green parish, said the houses were in a dreadful state, and it was sought to close the whole 44, which were situated in Newling Street, Chambord Street, Ducal Street, and Gossett Street, Bethnal Green. Mr. Geoghegan agreed that it was desirable to close the places, and his clients, the freeholders, as fast as they could get rid of the tenants, were boarding-up the entrances. He agreed to orders to close, and, after a discussion, Mr. Bushby made an order in respect of the whole of the houses, the owners to reimburse the parish 16s. costs.

James Augustus Stainer, a house decorator and builder, of 194, High Street, Borough, appeared to summonses taken out by Mr. F. H. Thomas, sanitary inspector to the vestry of Bermondsey, against him as the owner of nine houses in Ebenezer Row, Bermondsey, which were in such a state as to be a nuisance, injurious to health, and unfit for human habitation, for having failed to comply with notices served on him requiring him to place such houses in a sanitary condition.—Mr. Thomas stated that he inspected the houses on November 21, and finding them totally unfit for habitation he served the defendant with notices. Little or nothing having been done, he now applied for an order for closing the houses.—The defendant said he would consent to an order, but on the

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understanding that Mr. Thomas put no obstacles in the way of his reopening the houses when the repairs required by the vestry had been carried out.—Mr. Thomas said that when an order was made by the Court for the closing of such houses the matter was out of his hands. The defendant must apply to the Court to get the order set aside, and the magistrate being satisfied could remove the closing order.—The defendant said he had some difficulty in getting the tenants out, and when he applied to the Court Mr. Fenwick, the sitting magistrate, told him that he must not take the roof off whilst the tenants were in the house.—In the end Mr. Slade made an order that the houses were to be closed in 21 days, and not to be reopened until rendered fit for habitation.

Mrs. Harrison appeared in answer to a summons taken out by the sanitary inspector of St. Olave's Southwark, charging her as the owner of No. 13, Noah's Ark Alley, Bankside, with failing to comply with notice served on her under the Sanitary Act, requiring the premises to be put into proper sanitary repair.—Mr. Fenwick imposed a fine of £12 on the defendant, or 21 days in default.

At Southwark, Frederick Cousins, 10, Yubery Road, Holloway, attended in answer to a summons issued by Mr. J. A. Anscombe, sanitary inspector of St. George the Martyr, Southwark, against the owner of seven houses in Little Turner Street, Tabard Street, Borough, calling on him to show cause why the premises should not be closed on the ground that they were unfit for human habitation. It appeared from the evidence of the sanitary inspector, which was supported by Dr. Waterworth, the medical officer of health for the parish, that the houses were in a most filthy and dilapidated condition. The walls were damp and the floors were rotten, and the ventilation very defective. The houses, which are held on lease from the Bridgehouse Estates Committee of the City Corporation, were stated to be wretched little dens of two rooms, the lower room being in reality an underground cellar. In consequence of the dampness prevailing in these cellars all the members of the family were compelled to sleep in the upper rooms, and this led to excessive over-crowding. In one house, the inspector found a man and wife, with five children, occupying the same sleeping apartment, with a cubic space of only 600 ft., instead of 1,350 ft. as required by statute. In another instance a family of six occupied the same bedroom. The defendant denied that the houses were in such a bad condition as represented, and Mr. Slade adjourned the case in order to make a personal inspection of the property. Eventually he ordered one of the houses to be closed and adjourned the other cases for four weeks to give the owner time to execute the necessary sanitary repairs.

At the Marlborough Street Police Court, Mr. Saltewaite, of Little Goodge Street, was summoned by Mr. Alfred Davis, a member of the London County Council, for allowing a room or cellar to be occupied at 13, Gresse Street, contrary to Act of Parliament. Mr. Bowen, barrister, prosecuted; and Mr. Ricketts, solicitor, appeared for the defence. Mr. Davis said that the room in question was occupied by Sarah Arthurs, her sister, grown-up daughters, and a baby. Its dimensions were not in accordance with the requirements of the Act of Parliament, it being 9 ft. 1 in. in length, 7 ft. 7 in. wide, and 6 ft. 8 in. high. It was infested with rats, which gnawed the stockings of the occupants at night-time. Mr. Hannay imposed a fine of 20s. with three guineas costs, remarking that, as public attention had been called to the matter, perhaps in future the local authorities would take up such cases with more alacrity.

Lead-Poisoning from Water Supplies.—Reports of officers of health show that lead-poisoning from water supplies is largely on the increase. Numerous cases have been reported at Huddersfield, Sheffield, Bacup, Dronfield, and Mirfield. At Mirfield no fewer than 47 cases occurred last year

PARLIAMENTARY PAPERS ON SANITARY SUBJECTS PUBLISHED SINCE FEBRUARY 15, 1890.

(To be had of Messrs. P. S. King & Son, 5, *King Street, Westminster, S.W.)*

Diphtheria.—Mr. Spear's Report to the Local Government Board upon the Prevalence of Diphtheria and Croup in the Registration Sub-District of Pontypridd, and upon the Sanitary Condition and Administration of the Sanitary Areas therein contained. Feb. 1890. (No. 51) ..... 1½d.

Bills.

Architects' Registration. (Noble) ..... 1d.
Beer Adulteration. (Sir E. Birkbeck) ..... 1d.
Burials. (Osborne Morgan) 2d
Contagious Diseases (Animals). (Boord) ..... 1d.
Infant Life Protection. (Government) ..... 1d.
Infectious Disease Prevention. (Knowles) ..... 1d.
Metropolis Water. (O. V. Morgan) ..... 1d.
Public Health Acts Amendment. (F. S. Powell) ... 3d.
Urban Sanitary Authorities. Further Powers. (H. Fowler) ..... 2d.

CORRESPONDENCE.

Audi alteram partem.

[*All communications must bear the signature of the writers, though not necessarily for publication.*]

INCREASED TESTS AND QUALIFICATIONS FOR THE OFFICE OF INSPECTOR OF NUISANCES.

I have read from time to time the various papers which have been given and the discussions which have ensued on adding severer tests of examination to candidates for the office of inspector of nuisances.

I fully admit that the Sanitary Institute should, and doubtless will, make those examinations of increased value by requiring candidates to be possessed of a better knowledge of constructional work as connected with human habitations, sewerage, and water supplies; but there is a great danger that in the present agitation on this subject inspectors are out-leaping themselves. Moreover, there is just a suspicion that their motives may be questioned as to whether they are quite so disinterested and self-devoted as appears on the surface.

In every trade and profession there are individuals who, having themselves climbed the ladder, become afterwards imbued with a spirit of exclusiveness, and would fain cut off the rungs by which they did themselves ascend.

By all means let us go forward, but the exacting tests which have been suggested savour, it is feared, too much of *arrière pensée.*

I would instance particularly the suggestion that "candidates for the first grade of the inspectors examination should possess a knowledge of building construction equal to that required to obtain a first-class elementary certificate of the Science and Art Department"; and in the second grade, among other things, that "his knowledge of building construction should be equal to that required to obtain a first-class advanced certificate of the Science and Art Department."

One would wish to know how many existing inspectors have obtained the first-class advanced certificate of the Science and Art Department, and how many could obtain it.

There are even few architects who, without considerable "cramming," in addition to their every-day experience, could pull through such a thorough examination as this.

Is it not possible that only a very limited number of inspectors know what is contained in the syllabus and examination papers for building construction in the series of the Science and Art Department?

Let us act honestly and fairly. If it be a *sine quâ non* that all existing inspectors must submit themselves to the

examination suggested, then the Sanitary Institute will no doubt comply with most of the propositions, and the public will admire the self-devotion of the inspectors at large. If on the contrary, then a *via media* must be found, and I would suggest, as one having had a fair amount of experience in the Science and Art Department examinations, and as a certificated surveyor and also inspector of the Sanitary Institute, that a knowledge of building construction, equal to that required to obtain a pass certificate in the elementary stage and advanced stage for the first and second grade of inspectors respectively, is a fairly high standard under conditions which the inspector of nuisances will have to labour with existing Acts for many years to come.

C. C. SMITH, M. San. Inst.,
Surveyor and Inspector.

Skipton, Jan. 24, 1890.

OVER-CROWDED CEMETERIES

KINDLY permit me to call the attention of your readers to the following specific sanitary reforms advocated by the Church of England Burial Reform Association:—

1. *The adoption of every necessary sanitary precaution in the interests of the living, instead of paying inordinate (or too little) regard to the dead body.* The rubric in the Burial Service, "The priest and clerks meeting the corpse and going before it either into the church or *towards the grave,*" allows the body to be carried direct to its burial when there is danger of infection. All other necessary sanitary precautions should be adopted. When the presence of infectious germs is suspected, some chemical compound, capable of destroying such germs, should be placed in the coffin, and around the coffin in the grave. Mourners are not to do anything, or leave anything undone, imperilling their own bodily welfare, or that of the community.

2. *Burial as soon as, and not before, decomposition has been declared by competent authority to have sent in, instead of undue retention of the body above ground.* Timely interment tends to preserve in the minds of the relatives a happy recollection of the peace and beauty which mark the features of the recently dead.

3. *The use of a readily-perishable, inexpensive coffin, of hardened pulp or the like, instead of a heavy, costly coffin, of durable wood or metal.* The body should be buried in as close contact with the earth itself as circumstances, reverence, and decency permit, and at such a depth that the air, descending through the earth above, may exercise upon the body its purifying and disintegrating action. When death has arisen from an infectious disease, exceptional measures should be taken to prevent the liberation of infectious germs.

4. *Proper sanitary burial in earth sufficient and of a nature to effect the dissolution of the body, instead of imperfect, insanitary burial in a durable coffin in a vault, bricked grave, or already crowded pit.* The rubrics, "While the body is made ready to be *laid into the earth,*" and "While the *earth is being cast upon the body by some standing by,*" seem to indicate that the body is to be surrounded and covered with earth. "*Earth to earth*" burial, accompanied by every proper sanitary precaution, is the safest mode of burying the dead; and if the coffin be of a perishable nature, if the soil be dry and porous, if the graves be not too crowded, the dead are resolved in from three to seven years with the smallest risk of injury to the living.

F. LAWRENCE,
Westow Vicarage, York. Hon. Sec.

LECTURES FOR SANITARY INSPECTORS AT THE SANITARY INSTITUTE.

THE above course of lectures, as announced in your columns will, no doubt, prove an instructive one, although I, for one, consider that the course should not have been restricted to the instruction and the special benefit of sanitary inspectors.

The course should, in my opinion, have had a more extended application, so as to include medical officers of health and others of our co-workers, who play such an important part in the sanitary welfare of the urban and rural sanitary districts.

The time has passed when any one section of "health officers" can be considered as being the only persons in the community who care about the public health, or know what ought to be done to secure it; although many of these superior officers may think well to lecture us from time to time, as if a special gift of sanitary administration had been acquired by or vouchsafed to them alone.

Coventry, February 10, 1890. FREDERIC BOOKER, Sanitary Inspector.

PUBLIC HEALTH ACT, 1875.—A COW UNFIT FOR FOOD.

PERMIT me to say that I cannot claim to be the first inspector to seize a live animal as unfit for food and obtain a conviction for its exposure for sale as food, as it has been a common practice to seize them alive and obtain convictions in several large towns, as Nottingham, for instance.

I think it would be to the advantage of all your readers if such cases were sent to you for publication and comment on any special point of interest or law.

W. WILKINSON,
Chief Sanitary Inspector, Derby.

DEFECTS IN THE PUBLIC HEALTH ACT, 1875.

THE article in your last issue upon "Defects in the Public Health Act, 1875," is itself full of errors; will you kindly permit me, as briefly as possible, to point out a few of them.

Section 19.—The writer of the article states that this section gives no power of entry on private lands traversed by a public sewer. Sections 305, 306 give full powers for all lawful purposes.

Section 23.—The writer seems to infer that this section cannot be worked in rural districts having no surveyor. This is incorrect. All districts employ an inspector. The inspector is legally competent to do any act the law requires of a surveyor (in a rural district), and I, in common with many other inspectors, hold that there is no reason whatever why he should not be professionally competent to supervise house drainage.

On the question of legal competency see definition of "surveyor," section 4; see also section 191; also clause 13 of Art. 17 of the General Order of the Local Government Board, dated November 11, 1872, issued under the authority of the section last quoted.

Doubtless incompetent persons are appointed to the office of surveyor, but this is a question of defective administration, and not of defective law.

Section 62.—It is true that this section fails to meet the case of a house in an urban district isolated from the water mains, but the urban authority have their remedy nevertheless. The writer of the article appears to have read the Water Act, 1878, but has overlooked section 11.

Section 70.—It is not correct that the procedure under this section is more dilatory than that for abatement of nuisance; on the contrary, it is more prompt. At least two meetings of the authority must be held before legal proceedings can be taken for the abatement of nuisance, which generally means a delay of a month certain, and possibly 27 days of another.

Section 70 does not require the service of notice, hence there is a clear gain and saving of time of the space between two meetings of the board.

It cannot be fairly charged as a defect against this section that it does not take cognizance of the bacillus of enteritis.

The section provides that when proof can be given that the water of a well has poisoned anyone it shall be so

dealt with so that no one else shall run the risk of being poisoned, and it does not profess to provide, as the Scotch law does, against danger to health in the first instance. It is extremely difficult to prove with certainty that water has poisoned a person, it is still more difficult to prove that it is likely to do so. Scientific men are hopelessly at variance as to what does and does not make a water dangerous to health. Science is at fault, and not the law.

It would be very interesting to your readers if some of our friends in Scotland would tell us how their Act works in this respect.

The working of sections 38 and 62.

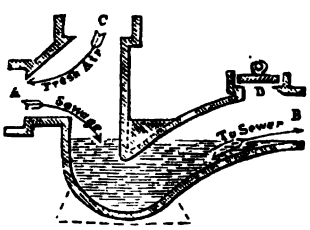
The writer gives his opinion that the administration of these and some other sections unnamed should be transferred from the surveyor to the inspector, but gives no reasons. Most inspectors will be quite prepared to agree that the time has arrived for the making of the transfers referred to, and also for other sweeping alterations of the law affecting the duties of surveyor and inspector respectively; and among other changes the repeal of the first portion of section 192.

JOHN HOUGHTON,
Inspector.

King's Heath,
Birmingham.

ERRATUM.

The illustration used for Answer to Question 6 of the Examination for Sanitary Inspector's Certificate, page 409, SANITARY RECORD, Feb. 15, should have been Mr. Buchan's trap, as figured below.



The one figured is not, we are informed, in use in Scotland.

SANITARY JOTTINGS.

MESSRS. Baird, Thompson & Co., ventilating, sanitary, heating, and lighting engineers, of London and Glasgow, have opened new show-rooms at 165, Queen Victoria Street, E.C.

THE Queen has been pleased to approve of the appointment of Joseph Henry Brady, Esq. (Colonial Engineer and Sanitary Inspector of the Colony of the Gambia), to be Colonial Engineer and Sanitary Inspector of the Island of Barbadoes.

MAJOR TULLOCH, R.E., has been at Gibraltar, inspecting the system of sewerage. He was sent out by the Colonial Office in consequence of the frequent representations made by naval and military authorities of the unsatisfactory state of the drainage.

THE Secretary of State for India has sanctioned the appointment of a Consulting Sanitary Engineer to the Government of Madras, at a salary of Rs. 1,000, rising to Rs. 1,300. Mr. J. A. Jones, Engineer to the Madras Municipality, will be the first to hold the office.

MAINTENANCE OF ROADS.—At a recent meeting of the Farmers' Club, Mr. Nathaniel Rix in the chair, a paper was read by Mr. Urban Smith, C.E., upon the subject of the "Maintenance of Roads in Rural Districts." A long discussion followed the reading of the paper.

PRESENTATION.—Mr. Joseph Lindley, one of the sanitary inspectors for Leeds, was presented by the sanitary officers on February 13 with a beautiful inlaid marble timepiece, as a token of esteem, upon his leaving the department, after fifteen years' service, he being appointed sanitary inspector for Batley. Mr. Chief Inspector J. Newhouse made the presentation, supported by Dr. J. S. Cameron, medical officer of health, and other officials, each of whom spoke in high terms of Mr. Lindley, and wished him all success in his new position.

THE following story now going the rounds, is a good specimen of Mr. Spurgeon's ready wit:—A gentleman who had amassed a big fortune in the erection of jerry-built villas and "eligible family residences," on retiring from business built for himself a splendid mansion in a suburban district, and being dubious as to a fitting name for it, wrote to the famous preacher for advice. When the answer came it was to the effect that, after very careful consideration, Mr. Spurgeon could think of no other name than *Dun robin*.

WHERE TO GET PURE MILK.—At the recent annual meeting of the Derbyshire Dairy Farmers' Association at Derby, it was resolved, on the principle that they must have their own hands clean before they approached any tribunal for self-protection, that any member who shall adulterate his milk, abstract the cream, or in any way tamper with the same, shall (if the committee think necessary) be expelled from the Association forthwith, and any benefits to which such member would have been entitled before or after be forfeited. This resolution was ordered to be added to the Association's rules

SANITATION IN HUDDERSFIELD. — Dr. Spottiswoode Cameron has observed that the diminution in the Huddersfield death-rate from diarrhœa during the last few years has been in direct proportion to the diligence with which the hose-pipe has been used. A study of the meteorological returns indicates that there has been a causal connection between certain atmospheric conditions and the prevalence of measles; and Dr. Cameron has been considering how, so far as the courts and alleys are concerned, the good sanitary services rendered by the "useful trouble of the rain" may be imitated artificially when requisite.

NATIONAL HEALTH SOCIETY.—An interesting course of lectures on "First Aid to Injured" has commenced at 7, St. James's Square, S.W., kindly lent by Lady Egerton of Tatton for this purpose. At the first lecture, which was attended by a distinguished audience, the lecturer, Mr. Owen Lankester, was very clear and lucid in his explanations. The lecture was fully illustrated by diagrams, models, a human skeleton, and a boy for the practising of bandaging, &c. These lectures will be continued every Tuesday until April 1. The proceeds are used for giving free lectures of sanitary matters amongst the poor, for which application should be made to the secretary, 44, Berners Street, W.

NOTICES OF MEETINGS.

THE SANITARY INSTITUTE.

AT a meeting of the Council, held on February 12, Sir Douglas Galton, K.C.B., F.R.S., in the chair, an invitation was received from the Town Council of Brighton inviting the Institute to hold its Annual Congress and Exhibition in that town in the autumn, which invitation has been accepted.

Three fellows and 15 associates were elected. Amongst the fellows recently elected have been the following members of the medical profession:—Sir William Guyer Hunter, K.C.M.G., M.P., M.D.; Sir Henry Thompson, M.B.; Sir William Bowman; Dr. Bushell Anningson; Wm. Armistead, Esq., M.B.; Dr. A. T. Brett; Dr. I. H. E. Brock; Dr. W. J. Collins; Dr. C. Harrison; Dr. E. W. Hope; W. Iliffe, Esq., M.R.C.S.; Shirley F. Murphy, Esq., M.R.C.S.; Charles E. Pavet, Esq., M.R.C.S.; Dr. T. Hall Redwood; Dr. J. B. Russell, LL.D.; Dr. E. C. Seaton; Dr. A. Hill; Dr. J. W. Taylor, J.P.; Dr. J. S. Taylor; Dr. E. W. Walford; Dr. W. Pearce.

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THE SANITARY ASSURANCE ASSOCIATION.

At the Ninth Annual Meeting of the Members of the Sanitary Assurance Association, held on February 17, 1890, at the offices, No. 5, Argyll Place, W., Sir Joseph Fayrer, K.C.S.I., F.R.S., in the chair, Mr. Joseph Hadley, Secretary, read the Annual Report. It referred to the work of the Council in promoting the Sanitary Registration of Buildings Bill, to the lectures given by Members of the Council on sanitary subjects, and special reference was made to the disclosure of serious sanitary defects n Board Schools and Clergy Houses which had been inspected by the Association during the past year.

The report concluded as follows:—"Though the important bearing of the work of the Association on the public health is not yet fully appreciated by the general public, the financial statement for the past year proves that the Association is making progress, and that after nine years' experience, its work continues to be appreciated. The income for the year was £398 8s. 10d.; and after meeting all liabilities, a balance is carried forward."

The Chairman proposed the adoption of the Report, and said that the more he saw of the work of the Association, and the need for sanitary improvement, the more was he interested in its progress, and he expressed a hope that not only might this Association prosper, but that others might be formed, so great was the work to be done. Alderman Sir Vincent Kennett Barrington seconded the adoption of the Report, which was passed unanimously.

General Burne, C.B., and Dr. Danford Thomas were re-elected members of the Executive Council; and Sir Joseph Fayrer and Professor T. Roger Smith, F.R.I.B.A., were re-elected President nd Vice-President respectively.

INTERNATIONAL CONGRESS OF HYGIENE.

The Lord Mayor of London received a deputation at the Mansion House on February 18, to discuss the arrangements to be made for the Seventh International Congress of Hygiene and Demography to be held in London in 1891. The deputation consisted of Sir Douglas Galton, K.C.B., Professor Corfield, Dr. E. D. Mapother, and Messrs. F. D. Mocatta, Shirley, F. Murphy, David Schloss, and E. White Wallis.

Sir Douglas Galton pointed out that previous meetings of the Congress had been held (biennially as a rule) in Brussels, Paris, Turin, Geneva, The Hague, and Vienna. The last of these, the Congress held at Vienna in 1887, being under the protection of His Imperial and Royal Highness the late Archduke Rudolph, Crown Prince of Austria, who opened the Congress in person. To this Congress delegates were appointed from all parts of the world, the total number of hygienists and statisticians present being over two thousand.

Professor Corfield, Mr. Murphy, and Mr. Schloss called attention to the very important questions brought forward at the Congresses, including those of Quarantine; the Sanitary Condition and Over-crowding of Factories and Workshops; Water Supply and Sewage Disposal; and others, all questions of the greatest importance both in London and in the country; and they pointed out the benefits to trade and commerce that would follow the adoption by other countries of such regulations and methods as were considered both necessary and desirable in Great Britain.

The Lord Mayor arranged to hold a public meeting at the Mansion House, on Thursday, April 24, for the purpose of bringing the matter forward, at which he consented to preside.

THE METROPOLITAN PUBLIC GARDENS ASSOCIATION.

A Meeting of members was held at 83, Lancaster Gate on March 5, under the presidency of Mr. F. D. Mocatta, vice-chairman. It was agreed to offer to open the Bath Street Board School playground in Clerkenwell on Saturdays; to offer to lay out, with certain restrictions, Sidney Square, E., and St. James's Churchyard, Ratcliff, E.; to initiate proceedings for the proposed conversion of the Hackney Marshes into a public recreation ground; to oppose the appropriation of a part of Euston Square; and to communicate with various authorities respecting Seward Street burial-ground, the Main Drainage Embankment, some vacant land at Clapton, the Emmanuel Hospital, James Street, Westminster; St. Mary's disused burial-ground, Paddington; St. Michael's Churchyard, Islington, and other spaces.

The Secretary reported the action that had been taken during the month with reference to the Bethnal Green Poors Land, Wandsworth Common, Barnes Common, some land near Aldgate Station, the schemes of the Charity Commissioners, and the question of the future maintenance of the gardens of the Association.

LOCAL INTELLIGENCE.

Mr. Joseph Lindley, the well-known secretary of the National Association of Sanitary Inspectors and of the "Yorkshire Centre," who holds certificates both in hygiene, building construction, chemistry, physiology, and mechanical engineering, has been appointed Inspector of Nuisances for the Borough of Batley, Yorkshire, *vice* A. Colbeck, resigned, at a salary of £120 per annum.

SANITO-PARLIAMENTARY.

HOUSE OF COMMONS.—Feb. 14.

Maintenance of Urban Main Roads.

Mr. Hobhouse asked the President of the Local Government Board whether he was aware that great difficulties had arisen between the county councils and the urban authorities claiming to maintain their main roads owing to the ambiguous language of section 11, sub-section 2, of the Local Government Act, 1888, in reference to the payment to be made by the county councils; and whether, in order to avoid the necessity for numerous arbitrations, the Local Government Board would issue a circular letter explaining the principles on which the payment towards the costs of maintenance and repair of urban main roads by county councils ought to be made.

Mr. Ritchie.—I am not aware that great difficulties have arisen between the county councils and the urban authorities claiming to maintain their main roads under section 11, sub-section 2, of the Local Government Act in reference to the payment to be made by the county councils. Up to the present time no actual submissions for arbitrations by the Board have been made. The Local Government Board have had addressed to them certain inquiries on the subject, and they have replied to the effect that the terms of the sub-section do not render it necessary that the county council should repay the whole of the cost of the maintenance and repair of a main road to the urban authority who claim to retain the powers and duties of maintaining and repairing such road, and that the Board are of opinion that the section contemplates that the urban authority shall receive from the county council an annual payment (to be determined as provided by sub-section 3) towards the expenditure on the road, the urban authority undertaking, if they deem it desirable, any additional expenditure at their own cost. It does not appear to me that at the present time the Board can with advantage issue a circular letter as suggested.

February 20.

Food and Drugs Act.

Mr. O. V. Morgan asked the Home Secretary what was the number of cases under the Sale of Food and Drugs and the Margarine Acts which had been brought before the magistrates at the Wandsworth Police Court during the past year.

Mr. Matthews.—There were 23 cases under the Food and Drugs Act and 13 under the Margarine Act.

February 27.

Sanitary Improvement of Barracks.

In introducing a Bill embodying the Government scheme for the improvement of barracks, Mr. Stanhope said that up to the present time no general scheme had been in existence for applying the principles of sanitary science to barracks, or adapting them to the exigencies of the present time. On the sanitary ground alone there was an overwhelming case. A large number of troops were now accommodated in camps at Aldershot, Shorncliffe, and Woolwich, where the huts, erected shortly after the Crimean War, were in a most unsatisfactory state. A large sum was necessary to put the Dublin Barracks into a tolerable condition and to provide new buildings. The state of the Galway Barracks was notorious throughout the United Kingdom, while two of the buildings at Portsmouth had had to be disused. Something must be done to improve the sanitary condition of the Royal Barracks at Dublin. Then, coming to foreign stations, they proposed to make the barracks of the troops wholesome, satisfactory, and comfortable, especially at Malta. At Gibraltar the death-rate of the troops was higher than in India. He proposed to revive Lord Herbert's Sanitary Committee, with a sanitary expert upon it, to advise on the condition of the buildings. He believed the Bill would put all the barrack accommodation on a sound and proper footing. It ought to be better than that provided by foreign countries, especially as so much attention was being paid to the housing of the working-classes. It was in that spirit he asked the House to allow him to introduce a Bill which would remove the unsanitary condition of the barracks and bring them up to the level of modern sanitary science.

The Sale of Food and Drugs and the Margarine Acts.

Mr. O. V. Morgan asked the Secretary of State for the Home Department relative to the return of cases under the Sale of Food and Drugs and the Margarine Acts which had been brought before the magistrates sitting at the Wandsworth Police Court during the past year and to the small fines inflicted in the various cases, whether the Local Government Board had, in several of their annual reports, drawn attention to the varying and insufficient penalties imposed upon offenders under these Acts; and whether, having regard to the importance to the public of the efficient administration of the Sale of Food and Drugs and Margarine Acts, he would take such steps as he might deem advisable with a view to uniformity of practice of the police magistrates in the metropolis in dealing with offenders against the Acts in question.

Mr. Matthews.—Yes, Sir, my attention has been called to those passages in the annual reports of the Local Government Board which comment upon the smallness of the fines frequently imposed in cases under the Sale of Food and Drugs Acts. I propose to draw the attention of the chief magistrate to this subject and to the complaints of the hon. member, and to request him, in conference with his brother magistrates, to arrive if possible at some common understanding with a view to secure uniformity of practice in the administration of these Acts.

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FEBRUARY 28.

THE ROYAL BARRACKS, DUBLIN.

Mr. MacNeill asked the Secretary of State for War whether it was true that Prince Edward of Saxe-Weimer, Sir Redvers Buller, and a large staff of experts had inspected the Royal Barracks, Dublin, and condemned in the most emphatic terms the system of sewerage in these barracks.

Mr. E. Stanhope.—It is quite true that the officers named did inspect the Royal Barracks, but I have not heard that any such expressions were used as those mentioned. The work of improveing the drainage of the Royal Barracks is not yet complete.

LONDON SEWAGE.

Major Rasch asked the President of the Local Government Board whether, before any scheme for the disposal of London sewage is adopted, a Government inquiry would be held at which the inhabitants of South-East Essex would have the opportunity of expressing their views and giving evidence.

Mr. Ritchie.—I am informed that the London County Council have no definite scheme for the disposal of London sewage under their consideration, but they have instructed the Main Drainage Committee to secure the services of an eminent civil engineer to join the engineer of the Council in a thorough examination of the whole sewage system of the metropolis. As no definite scheme is at present before the County Council I am not in a position to say what opportunity can be afforded to the inhabitants of South-East Essex of expressing their views and giving evidence.

APPOINTMENTS.

MEDICAL OFFICERS OF HEALTH.

ANNINGSON, Bushell, B.A., M.D., has been re-appointed Medical Officer of Health to the Chesterton Rural Sanitary Authority.

BERRY, H. Poole, M.B.Lond., M.R.C.S.Eng., has been re-appointed Medical Officer of Health to the Grantham Urban Sanitary District.

CHURCHILL, John Foot, L.R.C.P.Lond., M.R.C.S.Eng., L.S.A., has been re-appointed Medical Officer of Health to the Chesham Local Board.

CLEARY, P. J., M.B., B.Ch., has been appointed Medical Officer of Health for the Kilmallock Dispensary District.

CRESWELL, W. G., L.R.C.P., L.R.C.S.Edin., L.S.A., has been appointed Medical Officer of Health to the Saltley Local Board.

DAKEYNE, Thomas E., L.R.C.P.Edin., L.M., M.R.C.S.Eng., has been re-appointed Medical Officer of Health to the Leek Rural Sanitary Authority.

DAY, Edward J., M.R.C.S.Eng., L.S.A.Lond., has been re-appointed Medical Officer of Health to the Borough of Dorchester.

DEYLAND, John Winter, M.R.C.S.Eng., L.M., L.S.A., has been re-appointed Medical Officer of Health to the Kettering Urban Sanitary Authority.

EASTON, George F., M.D., L.R.C.S.Edin., has been re-appointed Medical Officer of Health to the Alnwick Urban Sanitary Authority.

GIBSON, James, M.B.Glasgow, C.M., L.F.P.S., has been appointed Medical Officer of Health to the Greetland Urban Sanitary Authority, *vice* J. Vere C. Denning, L.K.Q.C.P.I., resigned.

HARRIS, Arthur G. R., L.R.C.P.Lond., M.R.C.S.Eng., has been appointed Medical Officer of Health to the Market Weighton District of the Pocklington Rural Sanitary Authority.

HEPBURN, William Alexander, F.F.P.S., L.S.A.Lond., has been appointed Medical Officer of Health to the Durham Union Rural Sanitary Authority, Eastern District Union.

HOLLINGS, Charles Edward, L.R.C.P., L.R.C.S.Edin., L.F.P.S. Glasgow, has been re-appointed Medical Officer of Health to the Calverley Local Board.

HUSBAND, Charles, M.R.C.S.Eng., L.S.A.Lond., has been re-appointed Medical Officer of Health to Ripon City.

JEPSON, Edward, M.D., M.R.C.S., L.S.A., has been appointed Medical Officer of Health to the Durham Union Rural Sanitary Authority, Western District Union.

JOY, Frederick William, L.R.C.P.Edin., L.M., M.R.C.S.Eng., L.S.A., has been re-appointed Medical Officer of Health to the Thetford Borough.

LEGATE, Robert Lloyd, L.R.C.P., L.R.C.S.Edin., has been re-appointed Medical Officer of Health to the Christchurch Town Council.

LITTLETON, Philip Richard, M.R.C.S.Eng., has been re-appointed Medical Officer of Health to the Ashbourne Urban Sanitary Authority.

LUCAS, Herbert, M.R.C.S.Eng., L.S.A.Lond., has been re-appointed Medical Officer of Health to the Huntingdon Urban Sanitary Authority.

MCCAUSLAND, A., M.D., M.R.C.P., L.R.C.P., has been appointed Medical Officer of Health for the Swanage Urban Sanitary Authority, *vice* J. F. Somerville, L.F.P.S.Glasgow, resigned.

MACGREGOR, Duncan Alistair, M.B.Edin., C.M., has been re-appointed Medical Officer of Health to the Skelmanthorpe Local Board.

MACINTOSH, Angus, M.D.Glasgow, L.F.P.S., L.M., has been re-appointed Medical Officer of Health to the Chesterfield Rural Sanitary Authority.

MANLEY, John Herbert Hawkins, M.A.Cantab., M.B., B.C., M.R.C.S.Eng., L.S.A., has been appointed Medical Officer of Health to the West Bromwich Urban Sanitary District, *vice* J. Manley, M.R.C.S., L.S.A., resigned.

MEAD, George B. Owen, L.R.C.P.Edin., M.R.C.S.Eng., has been re-appointed Medical Officer of Health to the Newmarket Urban Sanitary Authority.

MORRIS, Albert, L.R.C.P.Edin., M.R.C.S.Eng., has been appointed Medical Officer of Health to the Southend Urban Sanitary Authority.

NEWBY, Thomas, M.D.St. And., M.R.C.S.Eng., L.S.A., has been appointed Medical Officer of Health to the enlarged borough of Great Grimsby, and to the Port Sanitary Authority.

OSBORN, Frank Charles, L.R.C.S.Edin., L.S.A., has been re-appointed Medical Officer of Health to the Bognor Urban Sanitary Authority, at a salary of £52 10s. per annum.

PRATT, John Wyatt, L.R.C.P.Edin., L.M., M.R.C.S.Eng., L.S.A., has been appointed Medical Officer of Health to the Wiveliscombe Urban Sanitary Authority, *vice* Charles Randolph, L.R.C.P.Edin., resigned.

SCOTT, Arthur William, M.D.Brux., M.R.C.S., L.S.A., has been re-appointed Medical Officer of Health to the Handsworth Urban Sanitary District.

SOUTHEY, Albert James, M.R.C.S.Eng., L.S.A., has been re-appointed Medical Officer of Health to the Slough Urban Sanitary Authority.

WRIGHT, Thomas Poynts, M.R.C.S.Eng., L.S.A., has been re-appointed Medical Officer of Health to the St. Neot's Urban Sanitary Authority.

YOUNG, William, M.D., has been re-appointed Medical Officer of Health to the Malton Urban Sanitary Authority.

POOR-LAW MEDICAL OFFICERS.

ATKINSON, Guy C. Barlow, M.R.C.S., L.S.A., has been appointed Medical Officer and Public Vaccinator for the Stotfold District of the Biggleswade Union, at a salary of £50 per annum, *vice* J. E. Fitzgerald, deceased.

BAILEY, H. Bennett, M.D.Brux., M.R.C.S., L.S.A., has been re-appointed Medical Officer for the Spittlegate District of the Grantham Union.

BARFORD, Arthur Morton, L.R.C.P., M.R.C.S., has been appointed Medical Officer for the Bracknell District and Workhouse of the East Hampstead Union.

BENSON, Henry Thomas, L.S.A., has been appointed Medical Officer to the Third District of Deeping St. Nicholas Spalding Union, *vice* T. E. Stafford, deceased.

BLAKE, W. H., M.B.Lond., B.S., M.R.C.S., has been appointed Medical Officer to the Third District of St. Alban's Union, *vice* F. R. Spackman, resigned.

BLAXALL, Frank Richardson, M.R.C.S.Eng., L.R.C.P.Lond., M.B.Lond., has been appointed Junior Assistant Medical Officer to the St. Pancras Infirmary, at a salary of £26 5s. for six months.

BROCK, W. J., M.B., C.M., has been appointed Medical Officer to the Parishes of Olrig and Dunnet, *vice* J. L. Waters, M.B., resigned.

BROWNE, David, M.R.C.S.Eng., L.K.Q.C.P.I., has been appointed Medical Officer to the Workhouse, New Winchester Union, at a salary of £75 per annum.

COPE, Dr., has been appointed Medical Officer and Medical Officer of Health to the No. 3 South City Dispensary District of the South Dublin Union, *vice* C. F. Moore, M.D.Glas., F.R.C.S.I., resigned.

GALLETLY, John, M.A., M.B. and C.M.Edin., has been appointed Medical Officer and Public Vaccinator to the Rippingale District of the Bourn Union, *vice* G. N. Robins, L.R.C.P.Edin., resigned.

GRIFFITH, Alfred Leete, M.D.St. And., M.R.C.S.Eng., L.M., L.S.A., has been appointed Medical Officer and Public Vaccinator to the Kensal Town District, Chelsea Parish.

HAMILL, Robert James, M.A., M.D., L.R.C.P., has been appointed Medical Officer to the Buckingham Palace Road Workhouse, St. George's, Hanover Square, Union.

HANDS, Arthur, L.R.C.P.Lond., M.R.C.S.Eng., has been appointed Medical Officer to the District comprising the whole of the township of Wednesfield, Wolverhampton Union, at a salary of £125 per annum.

HARRIS, Arthur, G. R., L.R.C.P.Lond., M.R.C.S.Eng., has been appointed Medical Officer of No. 2 Market Weighton District, Pocklington Union.

HARRIS, J. Henry, M.R.C.S., L.S.A., has been appointed Medical Officer and Public Vaccinator for the Ugborough District of the Totnes Union, *vice* R. Gillard, M.R.C.S., L.S.A.

HERRON, J., M.D.Univ.Irel., L.F.P.S.Glas., has been appointed Medical Officer to the St. Saviour's District Board of Works.

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JACKSON, J. B., M.D., has been appointed Deputy Medical Officer for No. 2 District of the Coventry Union, *vice* F. J. Malden, M.D., M.R.C.S., resigned, at a salary of £63 per annum.

JOHNSON, Henry Sandford, L.K.Q.C.P., L.M.Irel., L.F.P.S.Glas., has been re-appointed Medical Officer and Public Vaccinator to the Buckfastleigh and South Brent Districts of the Totnes Union.

MUDGE, James, M.R.C.S.Eng., L.R.C.P.Edin., L.S.A., has been appointed Medical Officer of Health to the Penzance Rural Sanitary Authority, at a salary of £80 per annum.

NEWCOMBE, Frank, M.R.C.S.Eng., L.S.A., has been re-appointed Medical Officer and Public Vaccinator for the Ancaster District of the Grantham Union.

NEWMAN, Horace Townsend, A.B.Dub., M.D.St. And., L.R.C.S.I., has been appointed Medical Officer for the Audlem District of the Nantwich Union.

OAKLEY, A. R. H., L.R.C.P., L.R.C.S.Edin., has been appointed Medical Officer to the A District of the St. George's, Hanover Square, Union.

PICKEN, James Parkgate, M.B.Glas., C.M., has been re-appointed Medical Officer of Health to the Rawmarsh Urban Sanitary Authority.

PRICE, Frederick Sterne, M.R.C.S., L.S.A., has been re-appointed Medical Officer to No. 2 District of the Holborn Union, at a salary of £105 per annum.

RAMAGE, A., L.R.C.P., L.R.C.S.Edin., L.F.P.S.Glas., has been appointed Deputy Medical Officer to the North Brierley Union, Yorkshire.

SEQUEIRA, James H., L.R.C.P.Lond., M.R.C.S.Eng., has been appointed Assistant Medical Officer to the North Western Hospital of the Metropolitan Asylums Board.

SHEA, J. G., L.K.Q.C.P.Irel., L.R.C.S.I., has been appointed Medical Officer to the Brampton and Walton Districts of the Chesterfield Union.

SMITH, Kenneth Rawlings, M.D.Lond., B.S., Cert.Pub.Health, M.R.C.S.Eng., L.S.A., has been appointed Medical Officer to the Halwell District of the Totnes Union, at a salary of £29 per annum, exclusive of fees.

UBSDELL, Henry, M.R.C.S.Eng., L.S.A., has been re-appointed Medical Officer to the Staverton and Rattery District of the Totnes Union.

WALKER, James Shirran Abernethy, M.B., C.M.Aber., has been appointed Assistant Medical Officer to the Salford Union Infirmary, at £140 per annum, with apartments in the Infirmary.

WALLACE, William, M.D., has been appointed Medical Officer to the Crick District of the Rugby Union.

WATSON, Joseph Riley, B.A.Camb., M.B.Edin., C.M., has been appointed Medical Officer for the Harrogate District of Knaresborough.

WHITE, P. B., M.D., has been appointed Medical Officer to the Boyle Workhouse, at a salary of £100 per annum, and Medical Officer of the Boyle No. 2 Dispensary, at a salary of £30, and £15 as Medical Officer of Health.

WILLAN, George Thomas, M.R.C.S.Eng., L.S.A., has been re-appointed Medical Officer and Public Vaccinator to the No. 2 District of the Melton Mowbray Union.

WILSON, Albert, L.R.C.P.Lond., M.R.C.S.Eng., has been appointed Medical Officer for the East District of Kingston-on-Hull Union.

WILSON, George, L.R.C.P., L.R.C.S.Edin., L.S.A., has been appointed Medical Officer of the Fourth District, St. Alban's Union.

PUBLIC ANALYSTS.

BODMER, Richard, F.S.C., F.C.S., has been appointed Public Analyst to the Saviour's District.

COLWELL, James, has been appointed Public Analyst to the Borough of Bedford.

KNIGHTS, J. W., has been re-appointed Public Analyst to the County of Huntingdon.

PUBLIC VACCINATORS.

STEVENS, Percy Richard, L.R.C.P.Lond., M.R.C.S.Eng., has been appointed Public Vaccination Officer for the Beneden District of the Cranbrook Union.

TABOR, Charles J., M.B., M.R.C.S., L.R.C.P., has been appointed Public Vaccinator for the Illogan District of Redruth Union.

INSPECTORS OF NUISANCES.

ATKINS, Josiah H., has been appointed Inspector of Nuisances to the Chepstow Urban Sanitary Authority, *vice* R. Thorn.

DAWSON, Mr., has been re-appointed Inspector of Nuisances to the Horbury (York) Local Board. Salary. £30 per annum.

DENNIS, Nelson F., has been appointed Inspector of Nuisances to the West Cowes Urban Sanitary Authority, *vice* Mr. J. A. Sargent, deceased.

GREENWELL, Allan, Cert. and Assoc.San.Inst., has been appointed Sanitary Inspector and Surveyor to the Frome Rural Sanitary and Highway Authority (No. 1 District), *vice* W. Adams.

HATHAWAY, John, has been re-appointed Inspector of Nuisances to the Winslow Rural Sanitary Authority for three years.

HAWLEY, George William, has been appointed Inspector o Nuisances to the Beeston Urban Sanitary Authority.

HOYLE, Richard, has been appointed Inspector of Nuisances to the Haslingden Urban Sanitary Authority, *vice* R. Barnes, deceased.

JACKSON William, has been re-appointed Inspector of Nuisances to the St. Neots Local Board, at a salary of £33 per annum.

PARSONS, J., has been re-appointed Inspector of Nuisances to the Swanage Local Board.

PATE, Mr., has been re-appointed Sanitary Inspector to the Ilkley Local Board.

RAINS J., has been re-appointed Inspector of Nuisances to the Kettering Local Board, at a salary of £80 per annum.

ROBINSON, E. S., has been re-appointed Sanitary Inspector to the Chesterfield Rural Sanitary Authority.

SHUFFLEBOTHAM, W., has been re-appointed Sanitary Inspector to the Leek Rural Sanitary Authority.

SMITH, Robert, has been appointed Inspector of Nuisances to the Swaffham Rural Sanitary Authority, *vice* G. Wilkinson, resigned.

WALLER, James, has been re-appointed Nuisance Inspector to the Calverley Local Board.

WHITEHEAD, J., has been re-appointed Sanitary Inspector to the Rawmarsh Local Board.

SURVEYORS.

ASPINALL, Mr. (Cardiff), has been appointed Surveyor to the Stroud Local Board.

BAYLEY, W. T., Strabane, Ireland, has been appointed Surveyor to the Chadlington Highway Board, Chipping Norton, *vice* Mr. Parkinson, resigned.

COOPER, C. H., A.M.I.C.E., Assistant Surveyor, has been appointed Surveyor to the Wimbledon Local Board, *vice* W. Santo Crimp, elected Assistant Engineer to the London County Council.

CORDON, R. C. (Newark), has been appointed, by the Derbyshire County Council, District Surveyor for the Belper Division, at a salary of £130 per annum.

HUMBLE, G. H., of Jarrow, has been appointed Surveyor to the Hebburn Local Board, at a salary of £130 per annum.

MANNING, G. W., has been appointed Assistant Surveyor to the Frome Local Board, at a salary of £75 per annum.

MILLINGTON, J. (Wirksworth), has been appointed, by the Derbyshire County Council, District Surveyor for the Ashbourn Division, at a salary of £130 per annum.

PERRY, W. F. (Ashby-de-la-Zouch), has been appointed, by the Derbyshire County Council, District Surveyor for the Derby Division, at a salary of £130 per annum.

ROBERTS, D. (Bakewell), has been appointed, by the Derbyshire County Council, District Surveyor for the Bakewell Division, at a salary of £130 per annum.

SHELDON, P. J., late Borough Surveyor to the Burslem Town Council, has been appointed County Surveyor of Essex.

SILCOCK, H. (Holmesfield, Chesterfield), has been appointed, by the Derbyshire County Council, District Surveyor for the Chesterfield Division, at a salary of £150 per annum.

STARKEY, L. (Leeds), has been appointed, by the Derbyshire County Council, District Surveyor for the Chapel-en-le-Frith Division, at a salary of £130 per annum.

WILLIAMS, Owen, Colwyn Bay, appointed Surveyor and Waterworks Manager to the Aberdare Local Board of Health, at a salary of £250 per annum.

CLERKS.

GIBSON, George, has been appointed Clerk to the Guardians of the Stokesley Union, *vice* T. Sowerby.

RESIGNATIONS.

BELLAMY, A., Inspector of Nuisances to the Horncastle Rural Sanitary Authority.

BOYD, E. B., Assistant Clerk to the Hackney Guardians.

BOYD, William, M.R.C.S.Eng., L.S.A., Medical Officer of St. Nicholas District of the Durham Union.

BURMAN, C. C., L.R.C.P.Edin., L.R.C.S.Edin., Medical Officer of the Workhouse and West District of Belford.

CLARKE, Thomas, L.R.C.P., L.F.P.S.Glasg., Medical Officer of the 2nd District of Pewsey.

GENN, W. J., Clerk to the Falmouth Guardians.

HOLLOWAY, Henry George, Clerk to the Isle of Thanet Guardians.

HOWE, Joseph D., M.R.C.S.Eng., L.S.A., Assistant Medical Officer for the Crampsall Workhouse, Manchester.

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JAMIESON, Charles, M.B.Glasg. and C.M., Medical Officer of the Finchingfield District of the Braintree Union.

JOHNSTONE, Charles S., M.R.C.S.Eng., L.S.A., Assistant Medical Officer at the Workhouse Infirmary, Birmingham.

LOWE, Septimus, L.R.C.P.Edin., M.R.C.S.Eng., Medical Officer to the 8th District of the Lincoln Union.

MITCHELL, C. J. C., M.D.Brux., M.R.C.S., L.S.A., Medical Officer to the Workhouse, Birmingham.

NEATE, Charles, M.D.St. And., M.R.C.S., L.S.A., Medical Officer to the Epsom Local Board.

PAULL, Henry, Clerk to the Chard Guardians.

SLESSER, Charles, M.D., Medical Officer for the Bramley District of the Bramley Union.

SPACKMAN, F. Robert, M.D., Medical Officer to the 4th District, St. Alban's Union.

VACANCIES.

MEDICAL OFFICER OF HEALTH.—The County Council, Lancaster, require a Medical Officer of Health for the County Palatine of Lancaster. Salary £800 per annum, with a reasonable allowance for travelling expenses. The official will not be eligible for a pension, and appointment will be terminable by a six months' notice on either side. Applications, with testimonials, to Fred. C. Hulton, Clerk to the County Council, County Offices, Preston, before March 22.

MEDICAL OFFICER OF HEALTH, &c.—The Corporation of Southampton will on March 26 appoint a Medical Officer of Health and Medical Officer of the Infectious Diseases Hospital for the Borough of Southampton. Salary, £300 per annum, and restricted from private practice. Applications (accompanied by recent testimonials), properly endorsed, must reach the office of R. S. Pearce, Esq., Town Clerk, Municipal Offices, Southampton, by March 19.

MEDICAL OFFICER for Durness, Sutherlandshire. Salary £150, with practice (population 1,000) and free house. Applications to be sent to the Inspector of Poor, up to April 2.

MEDICAL OFFICER for the Parochial Board of Fettercarry. Salary £18 per annum, including medicines. Applications to the Clerk by March 22.

MEDICAL OFFICER for the District of Willenhall of Wolverhampton Union. Salary £140 per annum. Applications to the Clerk.

MEDICAL OFFICER AND PUBLIC VACCINATOR for the District of Probus, Truro Union. Salary, £25 per annum, exclusive of the fees as allowed by the Local Government Board. Applications to F. Truscott, Esq., Clerk, by March 18.

MEDICAL OFFICER OF HEALTH required for the Eastern District of the Rural Sanitary District of the Truro Union. Salary, £45 per annum, including all travelling and other expenses. To F. Truscott, Esq., Clerk, by March 18.

ASSISTANT MEDICAL OFFICER is required by the Metropolitan Asylums Board for the South-Eastern Fever Hospital, New Cross Road, S.E. Salary, £15 per month, with board, furnished apartments, and washing. Age not to exceed 35 years. Applications, on forms to be obtained at the offices of the Board, Norfolk House, Norfolk Street, Strand, to be sent to W. F. Jebb, Clerk, by March 18.

INSPECTORS OF NUISANCES, &c.—The Wellington (Salop) Improvement Commissioners require the services of an Inspector of Nuisances and Collector of Rates to devote his whole time to the duties and give a guarantee of £400. Salary, £100 per annum. Applications, with testimonials, marked "Inspector, &c.," to reach Mr. Thomas Reid, Clerk, 45, Walker Street, Wellington, Salop, by March 18.

INSPECTOR OF NUISANCES.—The Corporation of Southampton will on March 26 appoint an Inspector of Nuisances for the Borough. Must be efficient and qualified person, holding the necessary diploma of the Sanitary Institute of Great Britain. Will be required to devote his whole time to the duties. Age not to exceed 40. Salary, £100 per annum. Applications, with recent testimonials, to R. S. Pearce, Esq., Town Clerk, Municipal Offices, Southampton, by March 19.

INSPECTOR OF WEIGHTS AND MEASURES.—The London County Council are prepared to receive applications from suitable persons between 28 and 50 years of age. Applications for appointments as Inspectors of Weights and Measures of the County of London. The appointments are:—One Chief Inspector at a salary of £500 a year; Six Inspectors at a salary of £300 a year each; and Eight Inspectors at a salary of £250 a year each, and the Inspectors will be provided by the Council with offices, appliances, assistants, and everything necessary for the proper performance of their duties. Inspectors are required, after appointment, to pass the examination and obtain the certificate of the Board of Trade, prescribed by the Weights and Measures Act, 1889. Applications, on printed form, to be obtained at the office, to be addressed to "The Clerk of the London County Council, Spring Gardens, S.W.," and marked "Inspectors of Weights and Measures," not later than March 17.

INSPECTORS OF WEIGHTS AND MEASURES.—Two Inspectors are required for the County of Monmouth, to perform the duties under the Act of 1889. Salary of each inspector £150 per annum. They will be required to devote the whole of their time to the service of the County. Applications, stating age (not to exceed 40 years), qualifications, references, &c., accompanied by testimonials, are to be sent to the Deputy Clerk of the County Council, Corn Street, Newport, by March 31.

ENGINEER.—The Municipality of Rangoon require the services of an Engineer. Salary Rs. 1,000 per mensem, rising to Rs. 1,500 per mensem, by annual increments of Rs. 100 per mensem. Applications will be received by J. Short, Secretary, Rangoon Municipality, up to noon April 7.

ENGINEER.—The Tees Conservancy Board require an Engineer. Candidates must have had practical experience in carrying out the various works appertaining to rivers and estuaries, including the construction of breakwaters. Application, stating qualifications, experience, and salary required, accompanied by testimonials, addressed to Mr. J. H. Amos, Secretary, Board Room, Stockton-on-Tees, endorsed "Application for Engineer," must be sent in by March 20.

ENGINEER AND SURVEYOR.—The Watford Local Board invite applications for the appointment of an Engineer and Surveyor, at a salary of £275 per annum, house and office found. Age not to exceed 40. Must have a practical knowledge of the duties of Surveyor and Inspector of Nuisances under the Public Health Act. Applications (on one side of foolscap) to Messrs. Sedgwick, Turner & Oddie, Solicitors, 66, High Street, Watford, by March 31.

ENGINEER AND MANAGER for the Gas Works at Bromley, Kent. Must devote his whole time to the office. Salary, £500 per annum. Applications, endorsed "Gas Manager," and stating earliest date at which he is prepared to enter on duties, to be sent to the Chairman, at the Works, by March 20.

ROAD SURVEYOR.—The Enfield Local Board will, at a meeting to be held on March 20 next, receive applications for the office of Road Surveyor of the District. Salary at the rate of £200 a year. Applications, endorsed "Road Surveyor," together with testimonials, to be sent to Mr. E. Letchworth, Clerk, Court House, Enfield, not later than Monday, March 17.

SURVEYOR.—The Bucks County Council require the services of a County Surveyor. Must give his whole time to the office. 220 miles of main roads. Applications, stating salary required and other particulars, to the Clerk of the Council, County Hall, Aylesbury.

ASSISTANT SURVEYOR.—The Corporation of Croydon require an Assistant Surveyor who is experienced in making town surveys. Salary £100 per annum, rising by biennial increments to a maximum of £120. Applications, accompanied by testimonials of recent date, to be sent to the Borough Engineer, at No. 8, Katherine Street, Croydon, not later than Monday, March 17.

ASSISTANT CLERK for the Wandsworth and Clapham Union. Age not to exceed 32; must possess a thorough knowledge of Union Accounts, and been at least three years in a Poor Law Office. Salary, £150 per annum, rising £10 annually to £200 with dinners, except Sundays. Applications to E. H. Taylor, Esq., Clerk, Union Offices, St. John's Hill, New Wandsworth, by March 19.

LOAN.

LEEDS CORPORATION THREE PER CENT. DEBENTURE STOCK.—The Corporation of Leeds are prepared to receive Applications for this Stock at par. Further particulars to be obtained of William Derry, Borough Accountant, Leeds.

DEATHS.

BENSON, Mr., Sanitary Inspector to the Leyton Local Board.

DIXON, George, Clerk to the Preston Guardians.

FIDLER, Thomas, Clerk to the Bakewell Guardians.

FITZGERALD, John Robert, L.R.C.S.I., L.A.H.Dub., Medical Officer of the Stotfold District of the Biggleswade Union.

GREEN, Charles, M.D.Durh., M.R.C.S., L.S.A., Medical Officer for the East District of the Gateshead Union.

HARRIS, Charles, M.D.St. And., M.R.C.S., L.S.A., Medical Officer of the 8th District of Battle Union, and of the 2nd District of the Rye Union.

MARRACK, E., Clerk to the Guardians of the Truro Union.

PARKINSON, Sidney G., M.R.C.S.Eng., L.S.A., Medical Officer of the No. 2 District of Wimborne and Cranborne.

STAFFORD, Thomas E., L.R.C.P.Edin., M.R.C.S.Eng., Medical Officer of the Maxey District of the Peterborough Union, and for the 3rd District of Deeping St. Nicholas.

WELCHMAN, Edward, L.R.C.P.Lond., M.R.C.S.Eng., Medical Officer of the 2nd and 3rd B Districts of the Wisbech Union.

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CONTRACTS.

BARKING SEWAGE WORKS.

THE London County Council invite Tenders for the filling-up of the existing 26 gripe, or channels, in the bottom (i.e. invert) of 13 double precipitation channels, the partial filling-up of the existing sludge-drains, and the laying of cast-iron trough rails or guides in the centre of each of the 26 grips before mentioned, and other works in connection therewith, at the Barking Outfall Sewage Precipitation Works, near Beckton, North Woolwich.

Specifications, form of Tender, &c., may be obtained on application at the Engineer's Department, Spring Gardens.

Tenders, addressed to the Clerk, and marked, "Tender for Filling-up Grips in Precipitation Channels, &c.," to be sent in by Monday, March 17.

THE Alfreton Local Board invite Tenders for enlarging their reservoir at Butterley, Ashover.

Specification, form of Tender, &c., may be obtained on application to the Engineer of the proposed work, Mr. V. Hill, Local Board Offices, Alfreton.

Tenders, addressed to Mr. E. E. Bone, Clerk, Alfreton, and endorsed, "Tender for Enlarging Reservoir," to be sent in by March 25.

THE Shirley and Freemantle Local Board iuvite Tenders for a Gas Engine and a Pair of Pumps for lifting the sewage on a part of their district.

Particulars can be obtained on application to Mr. H. J. Weston, A.M.I.C.E., Surveyor to the Board, 178, Shirley Road, Shirley, Southampton; and Tenders are to be delivered to Mr. M. Harle, Clerk, by Tuesday, March 18.

TENDERS are invited for the Supply and Fixing of an Engine, Pump, and Boiler, at their Waterworks, at West Kirby, for the Hoylake and West Kirby Gas Company.

Specifications may be obtained at the office of the Engineer of the Company, Mr. Ch. H. Beloe, M.I.C.E., 13, Harrington Street, Liverpool.

Sealed Tenders, endorsed "Tender for Machinery," to be delivered to Mr. A. G. Ready, Secretary, 8, Filey Terrace, Hoylake.

THE Guiseley (Yorks) Local Board iuvite Tenders for about 300 lineal yards of Earthenware Pipe Sewer, with Manholes and Lampholes.

Drawings and specifications may be seen and form of Tender obtained at the office of Mr. A. E. Preston, C E., Exchange, Bradford, Yorkshire.

Sealed Tenders, endorsed "Tender for Guiseley Sewerage," to be sent to Mr. C. J. Newstead, Clerk, Otley, by March 17.

HANWELL LOCAL BOARD.

The Hanwell Local Board invite Tenders for laying in Sewer and Surface Water Drains, &c., at Station Road.

Plans may be seen, and bill of quantities and form of Tender obtained on application to the Surveyor, Mr. E. J. W. Herbert, at the Board's Offices, High Street, Hanwell, W.

Tenders to be delivered at the Board's Offices not later than Tuesday, April 1, sealed, addressed to the Chairman of the Board, and marked "Tender for Station Road."

WEST COWES LOCAL BOARD.

The West Cowes Local Board invite Tenders for the Re-construction of the Western side of No. 2 Storage Reservoir of the Waterworks, and the strengthening of the Southern side with concrete walls.

Plans and specifications may be seen, and form of Tender obtained at the offices of Mr. N. F. Dennis, C.E., Town Surveyor.

Sealed Tenders, endorsed "Waterworks," are to be delivered at the office of Mr. H. J. Damant, Town Clerk, not later than March 18.

COMPETITIONS.

ENGINEERS', ELECTRICIANS', BUILDERS' AND IRONMONGERS' EXHIBITION.

Royal Agricultural Hall, N., March 17 to 29, 1890.

THE Midland Railway Company have arranged a two days' excursion from Bradford, Leeds, Sheffield, Liverpool, Manchester and principal intermediate stations, and on the same date, day trips from Burton, Derby, Nottingham, Leicester, Northampton, Bedford, Birmingham, Wolverhampton, Walsall and principal intermediate stations. Anyone interested in these professions and trades will receive a ticket admitting to the exhibition on sending a postcard to the offices, 43, New Oxford Street, W.C.

LEEDS INTERNATIONAL EXHIBITION.

AN International Exhibition is announced to open at Leeds, early next May, and to remain open for six months. A special section, housing of the poor, will include models of apartments, both full size and in minature, for one, two, and more tenants; sanitary and other fittings, furniture, and models of dwellings suitable for tenants under the Guiness gift. Another section will be devoted to hygiene, including sanitary appliances, lighting other than electric, heating and ventilation, water supply and gymnasia. Other sections relate to clothing, domestic and labour-saving appliances, and food.

NOTES AND QUERIES.

Having for some time back been in the receipt of Queries appertaining strictly to sanitary work, and which it would be easy to answer without having to refer our correspondents to competent professional advisers, we have opened a column in which to register such Queries and Replies thereto as can fairly be expected from us; and our subscribers and readers are invited to make such use of this column as will tend to benefit themselves and the community. Both Queries and Replies will, however, be subjected, if unnecessarily long, to a strict curtailment.

USE OF A VOID HOUSE.

Can a sanitary authority obtain an order from the magistrates under section 97 of the Public Health Act, 1875, to prohibit the using of an insanitary house which for the time being happens to be void, the same as if it were in occupation? SANITAS.

[There seem to be no words in the section which would prevent an order being made prohibiting the use of a void house; but we know of no case in which such an order has been made. It would, of course, be necessary to convince the court that the owner intended to use the house in its insanitary state. If not satisfied of this, the justices would probably refuse to make an order.—ED.]

SANITARY ORGANIZATION OF LONDON.

Can you kindly furnish me with a list of the vestries and sanitary divisions of London, with the names of heads of sanitary departments. SCOTUS.

[You will find such a list in the Local Government Directory, published by Knight & Co., 90, Fleet Street, London.—ED.]

INSPECTORS OF WEIGHTS AND MEASURES.

Will you please inform me in your next issue of the SANITARY RECORD which is my best way to proceed in order to prepare myself as an inspector under the Weights and Measures Act. SUBSCRIBER.

[Inspectors are required after appointment to pass the examination, and obtain the certificate of the Board of Trade, prescribed by the Weights and Measures Act, 1889, for ascertaining if they possess sufficient practical knowledge for properly carrying out the duties of the office. The duties of an inspector are indicated in the Weights and Measures Act, and in the Model Regulations issued by the Board of Trade, which, with the "Notice to Candidates and Heads of Examination," can be purchased from Messrs. Eyre & Spottiswoode, 32, Abingdon Street, London, S.W.—ED.]

DELEGATION OF DUTIES.

A is a medical officer of a rural sanitary authority of wide area, and has a son legally qualified; the authority have adopted the Notification Act of last year and requires the medical officer to visit each case reported at once. He (the medical officer) is also in private practice and finds it extremely inconvenient to do so, and requests the authority to appoint his son deputy, or allow him to visit when he cannot. The clerk, a solicitor, says such appointment cannot be made—must be personal service. Kindly say if the authority can so appoint. M. O. H.

[The delegation of the duties of a medical officer of health has always been discouraged, but under section 190 of the Public Health Act, 1875, it is provided that "every rural authority shall from time to time appoint fit and proper persons to be medical officer or officers of health, and inspector or inspectors of nuisances; they shall also appoint such assistants and other officers and servants as may be necessary and proper for the efficient execution of this Act." A rural sanitary authority have, therefore, under this section power to appoint an "assistant" to the medical officer of health for the purposes of the Public Health Act, but they have no power to appoint a "deputy medical officer of health" except "in case of illness or incapacity of the medical officer of health," as provided under the final clause of section 191. As regards the present case it may be observed that in the Infectious Disease (Notification) Act, 1889, the expression used is "the medical officer of health of the district," and it seems open to doubt whether the duties of that officer under the recent Act can be legally delegated to a substitute.—ED.]

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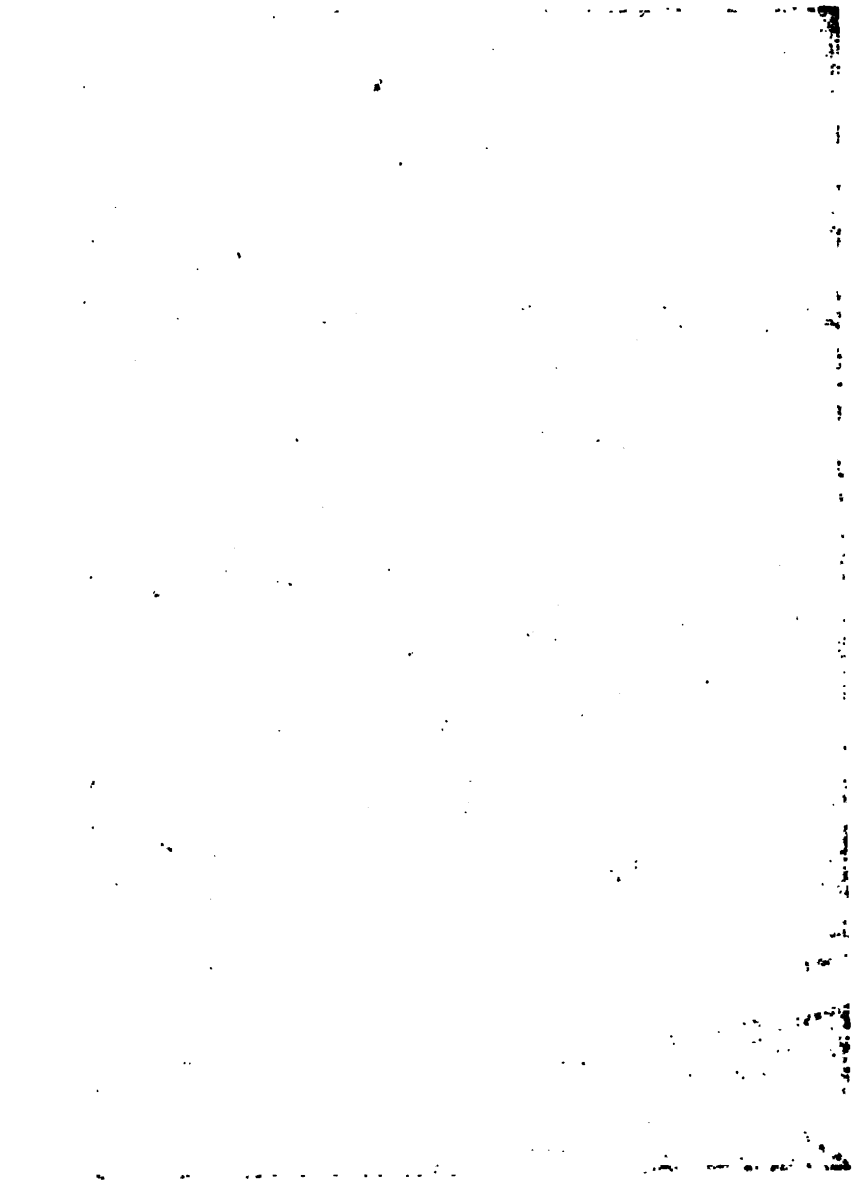

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ORIGINAL PAPERS.

NOTABLE SANITARY ENGINEERS.

No. 1.—Messrs. Doulton & Co.

We propose in these papers to give a description of the rise and progress of the most noted sanitary engineers, and to illustrate as far as possible the newest and most noteworthy improvements introduced by them. In commencing with the Messrs. Doulton, we do so, not because they are the oldest or the largest firm, but because they have introduced in connection with the sanitary arrangements of our homes, a notable system of art decoration combined with the most advanced hygienic inventions.

The firm now existing as Doulton & Co. was founded in the year 1815 by the late Mr. John Doulton, in conjunction with Mr. J. Watts (also deceased). Mr. Doulton had served his apprenticeship at the then celebrated Fulham potteries, and the spot in which the two potters commenced their operations was situate in Vauxhall Walk, then a very different neighbourhood to what it is at present. Here they carried on business until they migrated to High Street, Lambeth, in the year 1834. Not more than one dozen hands were employed by the firm at that time, and they were only working two kilns per week. At this time the goods manufactured by Messrs. Doulton & Watts were principally of a domestic character and for manufacturing purposes, stoneware drain-pipes not having been then invented, and the word "sanitary" scarcely ever heard. Mr. (now Sir) Henry Doulton, the present senior partner of the firm, entered it at the age of fifteen, and went through all the details of the business as workman, with distinction, and he is credited with having made upon the "wheel" the largest vessel that up to that time had ever been thrown.

Step by step the firm of Doulton & Watts grew in size and importance; faithfully carrying out the principle, that whatever they undertook should be done in the best possible manner. No one who has had experience of their productions will deny that this principle has been consistently carried out through the whole of their business career.

At length the time arrived when stoneware began to take that position in sanitary work which has since been so largely developed. In the year 1846 drain-pipes were introduced; and from their clean and imperishable character quickly began to supersede the old brick drains for house drainage.

To carry out this new industry it became necessary to build a new factory, and this was speedily done on a site near Lambeth Palace. Ingeniously constructed machinery enabled the firm to turn out the new stoneware pipes in large quantities, to the amount of some miles per week, and so rapidly did the demand increase that the partners found it necessary to open additional works at St. Helen's Lancashire, and Rowley Regis, near Dudley, now the largest drain-pipe works in the world. But even these factories proved insufficient to supply the various articles connected with drainage that have from time to time been introduced by Messrs. Doulton, and at a later date another factory was opened at Smethwick, near Birmingham. The combined output of these works at the present time is stated to exceed thirty-five miles per week of drain-pipes alone, besides gulleys, traps, and other appliances of the same character.

A somewhat lengthened controversy occurred in connection with the introduction of the glazed stoneware sanitary pipes. The leading engineers of the day, while admitting the value of the stoneware pipes in comparison with the brick connections from the houses to the drains, condemned the glazing, arguing that porous pipes were preferable; and we believe that some of these engineers refused to use the glazed article. In the end, however, it gained the day, and its superiority was universally admitted. In connection with drainage, the scientists of the day also considered the contraction of the size of a drain as detrimental to its efficiency, whereas it has since been proved that drains are much better when made of a size that will keep them continually filled during use. This principle ensures the scouring out of every part, whilst in the case of a large drain, it is often only imperfectly washed out, and the current of sewage is always sluggish, which causes a settlement of excreta, and makes the subsequent stoppage only a matter of time.

In the year 1877 Messrs. Doulton commenced the manufacture of fitted sanitary appliances, such as water-closet apparatus, &c. Buildings opposite the Albert Embankment were erected especially for this class of work, comprising lathes and other appliances for turning and finishing brasswork, &c. Later on the firm decided to open works at Paisley for brass and iron founding connected with sanitary fittings, and spurred on by the march of improvement and that restless activity which incessantly seeks to do better, works at Burslem were acquired about the year 1877 for the manufacture of high-class earthenware, and for a long time past white enamelled sinks, lavatory basins, urinals, water-closets, &c., of every type have have been made there.

The name of Doulton will always be associated with modern art ware, not only in connection with the unique and beautiful specimens of ceramic art bearing the name of "Doulton ware," and others since introduced, but from the application of artistic decoration to sanitary purposes.

Doulton ware was first exhibited in 1870, at the annual exhibition then being held at South Kensington, the articles shown being novel in shape, and ornamented with outline etchings. The Doulton ware had not then reached the zenith of its perfection, but there was an amount of originality in the exhibits which secured the good opinion of connoisseurs, and ensured its success. About 1872–73 Messrs. Doulton began to apply the new ornamental ware, in the form of columns, tiles, panels, &c., to sanitary fittings, and from that year dates the improved appearance of certain sanitary arrangements now considered necessary in every well-appointed house.

Messrs. Doulton's exhibits at the Vienna Exhibition of 1873, showed that considerable progress had been made in the ornamentation of their ware, in the application of colour, and by the introduction of *sgrafito* and *appliqué* ornamentation, which attracted much attention, the late Emperor Frederick of Germany being especially interested in it. Since that time, the quantity and variety of the art manufactures of the firm have considerably increased.

In conjunction with the art productions mentioned is the terra-cotta ornament for architectural purposes which the Messrs. Doulton have laboured so meritoriously to introduce and bring to perfection, and of which the splendid pile of buildings facing the Albert Embankment provides an example. This work was commenced in 1877, and the show-rooms

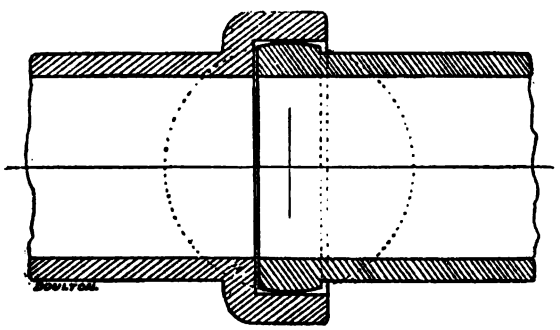
were opened in the year following, but terra-cotta statues and other articles had been manufactured by the firm as far back as the year 1840.

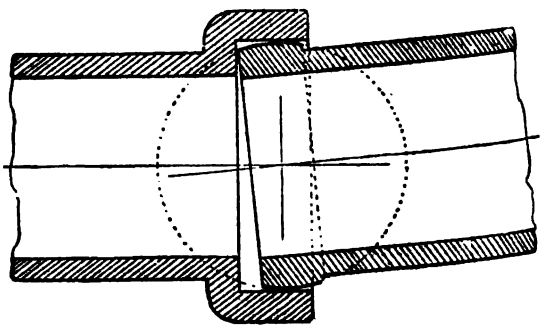
About 1855 a department was opened for the manufacture of terra-cotta garden vases, &c., and during the decade that ensued this branch had so increased that it had to be considerably extended in 1865.

The value of terra-cotta for architectural and building purposes has been long admitted, and with the consequent application of colour to it, which is effected by means of a second burning in a kiln of special construction, and the after-glazing which fixes the colours, terra-cotta for external use may be made to last in this climate for centuries, and so add durable decoration to domestic and public architecture.

Since 1865 the increase in the demand for terra-cotta has become incessant, and two years ago additional works for its manufacture were opened at Rowley Regis.

With the vast resources at the command of the Messrs. Doulton, their desire, in common with all energetic men of business, to extend their operations, they added another branch of manufacture to their output, and in the year 1864 commenced the manufacture of crucibles at Lambeth pottery.





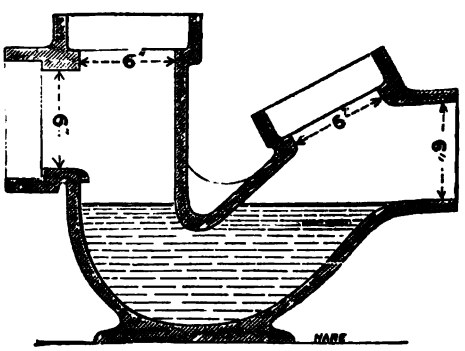
Before beginning, careful experiments were made, for the purpose of securing the most suitable materials. To effect this object an extended visit was made to the Continent and other parts by the late Mr. John K. Doulton, who at the time in question superintended the work personally. The progress in the manufacture of crucibles was at first slow, but with the assistance of improved machinery and scrupulous attention to detail, that which is especially needed in this class of goods, all difficulties were overcome, and the result was the establishment of the excellence which this branch of their business has since attained. It is, we believe, a fact, that Messrs. Doulton's crucibles may now be found in use in every description of metallurgical process, and in every quarter of the globe.

In the year 1886, the Messrs. Doulton opened a depôt in the Boulevard Bessiéres, Paris, for the manufacture of sanitary goods. This venture has also proved successful, and the articles turned out at the Paris factory are much appreciated, and are gradually finding their way throughout the country and in adjoining ones also.

One of the most important of the leading specialities in sanitary ware recently introduced by the firm is Doulton's patent self-adjusting joint, as illustrated below. Those who are engaged in the laying of drain-pipes know too well the value of a secure joint, and the disappointments often experienced in their work through careless laying, settlement of ground, &c. The joint in question, as will be seen by the illustration, is designed to allow of considerable deflection from the straight line without interfering with its security, and is laid without the addition of any cementing material, the pipes being supplied with the jointing matter upon them, so that nothing further is required to secure a water-tight connection. They may be laid by unskilled workmen, and a considerable saving of labour and cementing material is necessarily effected. Another important point to be borne in mind is that the pipes are ready for use as soon as laid, which is especially advantageous when working in wet or treacherous ground. These pipes have been extensively employed by Her Majesty's Office of Works, and examples of them laid, showing the great deflection they are capable of withstanding without leakage, may be seen at the Lambeth works.

No less important to the householder in connection with drainage is Doulton's improved sewer-gas intercepter, shown in the accompanying drawing. In this article the tip at inlet causes the soil to shoot into the centre of the trap (which, it will be seen, is effectually sealed) without touching the sides. The inlet is made with a vertical drop, while the outlet is easy, which ensures cleansing of the trap at every discharge. These traps are supplied either with or without the inspection socket, shown in the illustration.

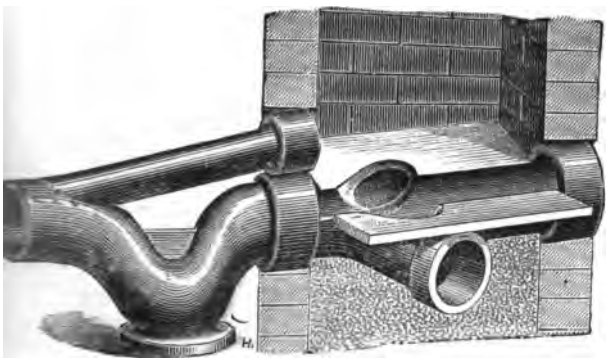
Another intercepting trap worthy of commendation is Kenon's air chamber floor and trap, the object of



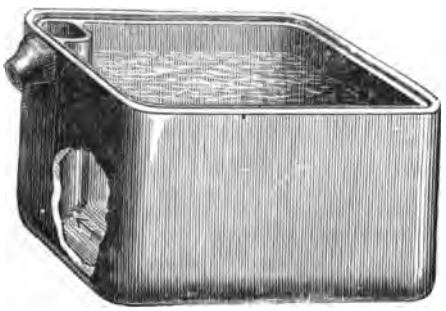
which is the effectual cutting off all direct communication with the main sewer. The appended illustration will enable the reader to follow the description of the appliance. It is placed at the bottom of the manhole, and is made in one piece of stoneware, with centre channel for the passage of the soil, and inlets for the branch drains. The trap is provided with a long arm for inspecting the drain beyond. When not

in use, this arm is sealed, but with a movable cap. The top of the manhole is covered with an iron flap or stone, with ventilating pipe where convenient. This trap has been found very effectual in use.

One of the greatest nuisances in connection with house drainage is grease, and some few years since



the attention of makers of sanitary appliances was requested to this fact. The outcome has been the introduction of several intercepting mediums to arrest the flow of the greasy liquids daily poured down the sinks in our kitchens. Messrs. Doulton are the makers



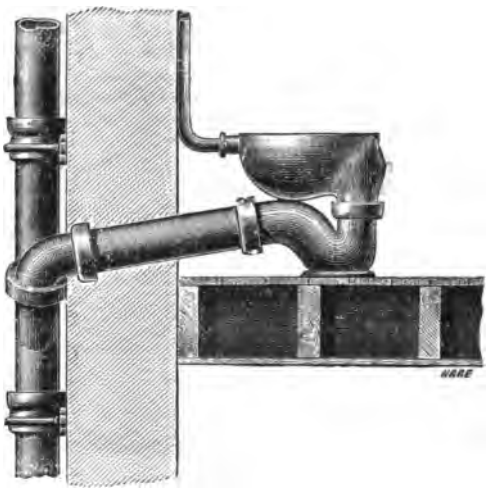
GREASE INTERCEPTING TANK.

of several of these articles, and we select one for illustration which has proved very efficacious in use. In this appliance the greasy water enters at the top,

ELEVATION SHEWING RANGE OF CLOSETS

and, of course, cools itself as it fills the receptacle, and remains in it, as no liquid can flow from the tank until full, and then only from an outlet near the bottom which communicates with overflow; the grease floats at the top, and is skimmed off as frequently as necessary. Being perfectly free in the interior from any valve or mechanism, the grease is easily collected and removed.

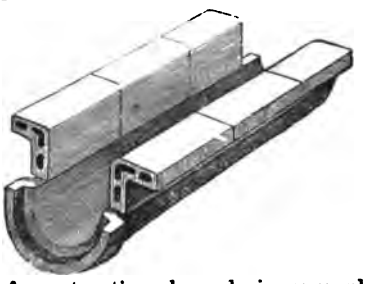
In connection with drain-pipes, the firm recently introduced a new pipe for house drainage for carrying up the sides of walls, &c., to take the place of the iron or other metal pipes, of which illustrations are appended. These pipes are manufactured of the best stoneware, with a highly-enamelled surface both inside and outside, in lengths of 3 feet, and with Doulton's patent self-adjusting joint. They are of a cream colour, so as to be readily discernible from the ordinary drain-pipe, and possess the advantage over metal of being absolutely incorrodible. Our second illustration exhibits the pipes connected with a closet



SECTION SHEWING CONNECTION TO BASIN

inside. They are fastened to the walls by ornamental iron bands, and readily adapt themselves to any settlement of the brickwork without injury.

Our next illustration shows another very useful invention, viz. Doulton's patent conduits, made of the best glazed stoneware. These are designed for the



purpose of constructing channels in open places for irrigation, sewerage, &c. It will be observed that they are made with a broad flange on either side, enabling them to be securely fixed, and broad enough for a man to walk along if necessary, and will be found useful for a variety of purposes.

Baths of all materials form an important output at

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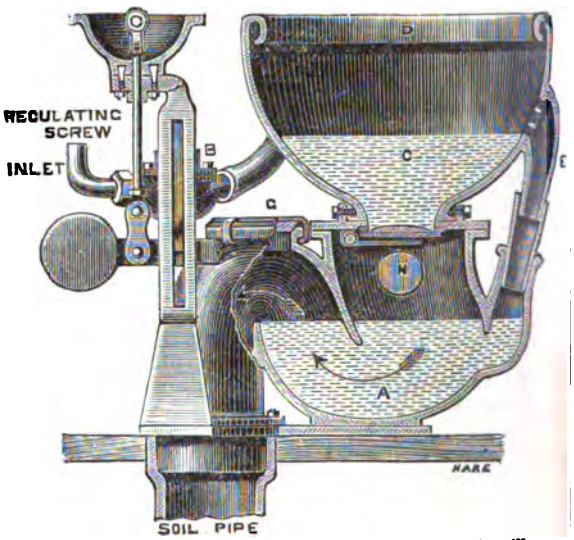
the Lambeth works, and the sanitary section of Messrs. Doulton's illustrated pattern book is replete with drawings and descriptions of every kind in use, mounted with woodwork and without, and to this pattern book we must refer our readers for full information as to baths and lavatories which are fully illustrated therein. There is, however, an apparatus connected with the heating of baths which is worthy of illustration. The introduction of geysers, or instantaneous water heaters, has materially altered the mode of heating water for baths, where hot and cold supply of water is not laid on. The old manner of heating baths by a gas furnace underneath the bath is almost very properly obsolete, and the instantaneous water-heater has taken its place. Several of these appliances are in the market, more or less differing in internal construction, but all providing the same effect, that of admitting cold water at the inlet and discharging it fully heated at the outlet, for the bath or other domestic purposes. At the Healtheries Exhibition at South Kensington, we called attention to a new water heater of this description, exhibited by the Messrs. Doulton, and we now illustrate a further improvement in this direction. Doulton's patent paragon geyser has, amongst other advantages, that the water does not come in contact with the gas, which makes the water available for culinary or domestic purposes. But its greatest advantages lie in the following arrangements.

It has a swing burner which reduces the gas when drawn out for lighting, and automatically lights up when put back. It also contains an automatic regulator to prevent the excessive force of gas, and turns off the light sufficiently to render it harmless to the apparatus in the event of the cistern becoming empty or the water supply being stopped, thus preventing burning of the cistern. Should the water be turned on again it will open the gas valve, while the apparatus may be still left to itself. These are advantages which do not exist, so far as we are aware, in any other apparatus of the kind, and constitutes the paragon geyser as the safest of its kind now before us.

The history of water-closets as connected with this firm alone would form a good-sized pamphlet; suffice it to say that the Messrs. Doulton have been associated with this branch of sanitation from the time they commenced making sanitary fittings, and they have always been in the "van" as regards improvements. From the old hopper pan to the latest introduction, the wash-out and combination closets, Messrs. Doulton's show-rooms are replete with the various improvements from time to time introduced. We append an illustration of one of the newest patterns of the Lambeth valve-closet, of which there are several made, all differing slightly in construction.



The valve-closet has a host of supporters, and still holds its own, notwithstanding the introduction of the "wash-out." The one in question (illustrated) has the great advantage of having the trap above the floor line, and as sent out from the works can at once be screwed down to the existing floor, requiring only two joints, one to the supply-valve and the other to the soil-pipe. The several complications of mechanism that exist in many of its kind, making the fixing more expensive, probably, than the cost of the closet itself, is here entirely dispensed with. The trap is supplied with an opening for inspection, and one for ventilation. The former is secured with a patent cap, ground into the opening, and so constructed that a turn either way disengages or fixes it, and when fixed is hermetically sealed.

The Lambeth improved "flush-out" closet is another closet worthy of commendation. We are not prepared to say who was the original inventor of the wash-out or flush-out closet. Opinions are somewhat divided upon this point, and we do not know that the Messrs. Doulton claim to be the inventors; but they were certainly one of the first firms in the field with this latest addition to sanitary appliances. Our readers must be well aware of the objections urged against the earlier shapes of the wash-outs, that the flush did not entirely clear the basin, and the one in question was designed to overcome this objection.

The shape of the basin has been designed so that

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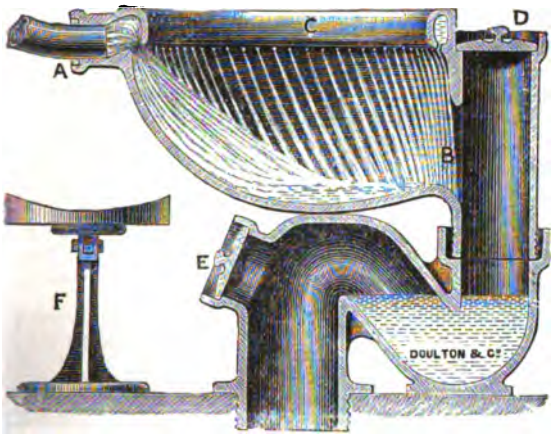
the greatest amount of water shall remain in it, so as to offer the least resistance to the action of the flush. The water enters the basin at A, directly opposite the discharge opening B, and it is claimed that by this



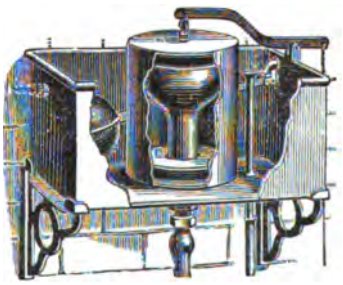
arrangement a perfect flush is secured. The flushing rim C is formed so as to wash the whole surface of the basin, yet to allow the main volume of water to discharge itself as previously described. A plate D over the discharge opening, on removal, gives access to the trap below to allow of cleaning if necessary. Attention to this prevents foreign matter being carried into the drains, and a stoppage thereby avoided. A socket to the trap E is provided for inspection at this point (or ventilation), and a light iron standard F is provided when ordered, so that the trap (which is a separate piece) can be turned in any direction to suit the soil-pipe. This closet has been much approved, and answers the purpose for which it was introduced remarkably well.

Two of the newest and best arranged closets, introduced as improvements on the ordinary wash-out, are the "Combination" and the "Simplicitas," illustrated below. In the former, the front of basin is lipped to form urinal and slop sink when the seat is raised, and it has a water area equal to size of hole in seat, rendering the chance of soiling basin very remote.

It is self-contained, and all parts open to inspection, and depth of water retained in basin is 1½ inch. It can be flushed by a seat action, or the usual water waste preventer with pull-handle. This closet is made in all kinds of ware, and can be highly decorated when required. The "Simplicitas" is somewhat of the same character, and constructed in one piece of stoneware, also glazed ware, or the more ornamental kinds of Queen's ware. It is specially constructed to work with a syphon cistern, and by its formation all parts are thoroughly cleansed at each flush.

The back is so formed that the soil must fall into the water of the trap, and the flushing-rim is reduced to a minimum, in order to prevent its being fouled in use where it cannot be flushed. We recommend all those interested in the fixing of improved closets to examine these before coming to a decision.

A good water waste preventer or flushing cistern is a most necessary adjunct to every closet. The numbers of these appliances now in the trade is a proof of our assertion. Those on the syphon or automatic principle appear to be generally preferred, as there is less mechanism about them, and there is no necessity to hold the chain until the cistern has emptied its contents. We give an illustration of one made by the firm, viz. Doulton's patent vacuum water waste preventer, which possesses commendable advantages.

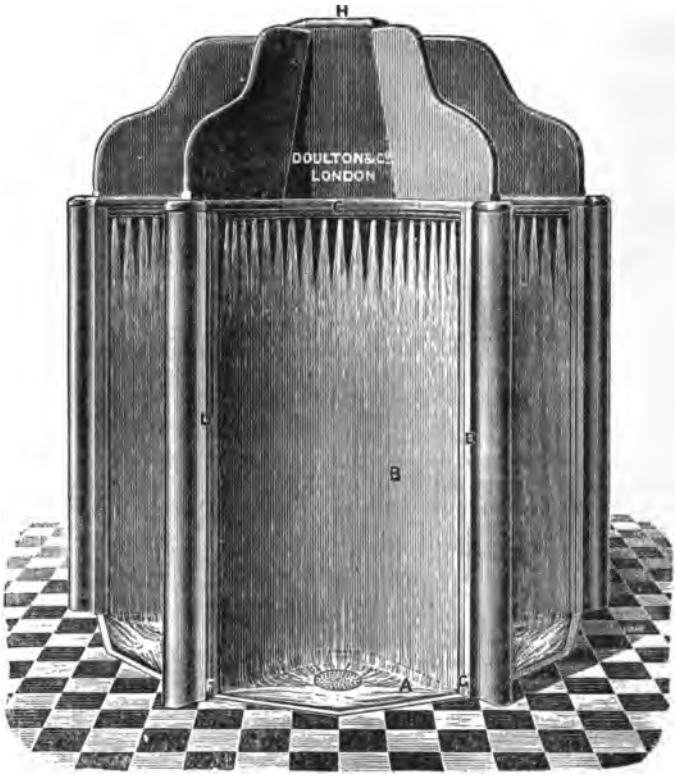


To start this apparatus the lever H is pulled down; this raises the cylinder B, which draws up and discharges into the mouth C sufficient water to start the annular syphon. This cistern is also made to act in connection with what is known as the seat action, and in this case is necessarily perfectly automatic, securing a two-gallon flush each time the closet is used. For valve-closets a special cistern is made provided with an after charge, and so arranged that the syphon action is cut off on dropping the handle, the after flush then flowing in. It will be observed that the mechanism is of the most simple character, and it contains nothing likely to get out of order. We understand there is a great demand for this cistern.

Another sanitary appliance on which much thought

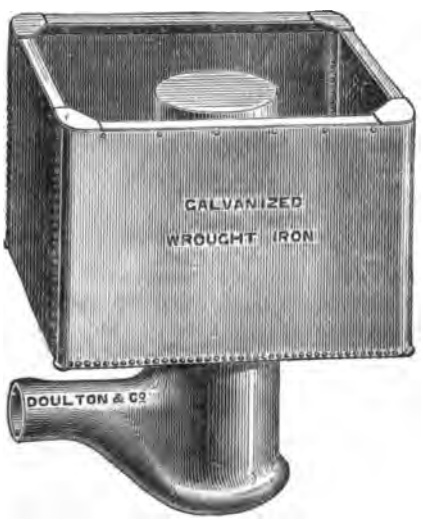
has been expended, and many improvements made, is the urinal, and one of the latest is that made of stoneware by Messrs. Doulton. These apparatus have been fixed already in a variety of places, are giving great satisfaction, and are considered far in advance of any style of urinal yet brought out.

These urinals are made of any shape required. The backs are circular, and the gutters well dished, both being made of strong salt-glazed stoneware, which is proof against the effects of urine. In



place of the water running away at the back, it escapes in a channel in front, to which a trap is attached a short distance from the urinal, allowing of easy access, should a stoppage occur, which however is very unlikely. The capping of the whole is made of slate, and a copper pipe is carried round the apparatus, protected by the slate top, and this effectually flushes both back and gutter. The most approved form of flushing is by the Doulton Automatic Flush tank (illustrated).

These tanks can be fixed above the slate tops by means of wrought iron supports. Water from any available source can be collected and brought for the service of the urinal by means of the tank illustrated. and the discharge can be regulated from the merest dribble, to a full flush at any periodic time decided upon.



A most valuable invention of the Messrs. Doulton has been the Doulton-Peto fireproof flooring, which we illustrate. Anything calculated to arrest the progress of flames at a fire deserves the most active support from all classes, but this has probably become more difficult by the introduction of iron to the extent it has now assumed in building construction.

Cement construction is often not fireproof, and being a heat conductor will only resist the fire for a limited period. Clay construction is the most efficient fireproof system, and of this material the Doulton-Peto flooring is manufactured. A reference to the illustration will show that it is made in small sections, and it is both light and very strong, and effectually protects the flanges of the iron girders. The introduction of air passages renders it a non-conductor, and there is no expansion under heat. It requires very little moisture in fixing, and as a consequence may be plastered upon immediately.

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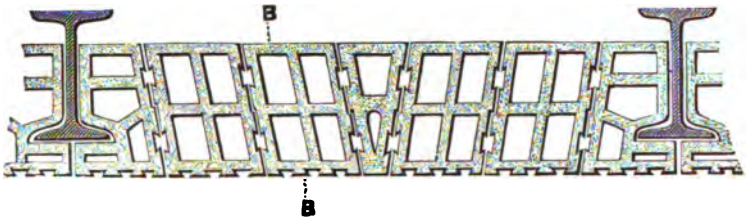
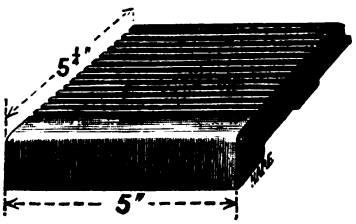
During the building of the London Pavilion Music Hall, where the Doulton-Peto flooring was used, the plastering underneath and the laying of the wood flooring above was carried on simultaneously.

This fireproof flooring has been put to the severest tests, amongst others heavy fires have been lighted underneath it, with great weight above, and at the same time it has been thoroughly saturated with water. It also provides perfect ventilation throughout the whole range, and its cost is so moderate that it is bound to be extensively used.



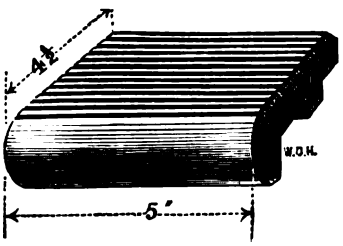
Another of the comparatively recent inventions is the silicon tread, adapted for the facing of stone or any kind of steps or staircases, to which it offers at all times a firm and, broadly speaking, an impenetrable foothold. It is made of the hardest possible clay burnt almost to vitrefaction, yet is not slippery in the least. The "nosing" of a tread



is the part that receives all the work, and if that is made of thoroughly hard material the whole step will remain sound. The silicon tread has been used with great success at all the underground urinals, and many places in the city. These treads may be inserted into old stone steps to repair them, and they are often used in conjunction with cement steps. In the latter form they have been introduced in many industrial dwellings, board schools, barracks, &c., with the greatest success.

Space prevents us from illustrating more of the many articles connected with sanitary science manufactured by this noted firm, and the art department, except in so far as we have mentioned it in connection with sanitary ware, we must also pass over.

In 1872 Messrs. Doulton began to employ female labour in general decorative work, which proved a highly satisfactory measure, and in 1882 a presentation was made to Mr. Henry Doulton to commemorate the ten years of female employment. The year 1885 was a memorable one in the annals of the Lambeth firm, when the Albert Medal of the Society of Arts was awarded to Mr. Henry Doulton, and presented to him at the works by H.R.H. the Prince of Wales, on which occasion the workmen of Messrs. Doulton & Co. also presented him with an address. But a still greater honour was in store for the head of the firm in 1887, when Her Majesty conferred the honour of a knighthood on Mr. Henry Doulton, the



first time we believe in the annals of the trade that a potter has been selected for such a distinction.

Altogether the firm have 14 distinct factories, situated as under:—

Lambeth 4, St. Helen's 2, Rowley Regis 3, Burslem 2, Smethwick 1, Paisley 1, and Paris 1. At the four Lambeth factories about 1,450 workpeople and artists are employed, while the combined number of male and female workers at the various works amounts to 3,200. Taken in its entirety, the record of this firm is one of which any manufacturer may be proud.

THE SANITARY CONDITION OF JAPAN.*

By W. K. Burton, Professor of Sanitary Engineering in the University of Tokio.

We may generally come to learn much of the conditions that surround us by the consideration of others that are as different as may be from those that we are accustomed to. For that reason I think that a few notes on the sanitary condition of Japan may be useful or at least interesting. On account of the habits of the Japanese people, and of the style of their buildings, the sanitary condition of Japan differs from that of England as widely, perhaps, as is possible in the case of a country where sanitary matters have had any attention at all.

I write as an engineer only, and it is therefore chiefly of such things as may be classed under the heading of "Sanitary Engineering," that I shall have anything to say.

I may here say at once that, so far as the two chief matters of sanitary engineering, namely, water supply and sewage disposal, go, the present condition of Japan is very bad, but that it is being rapidly improved.

First, in connection with sewage disposal we are faced with the fact that all the ordure and the urine have to be collected and carried undiluted to the fields. I say have to, because the disposal of the constituents of sewage just mentioned on the land is so integral a part of the

Sewage disposal.

* Read at the Sanitary Institute, March 1890.

agricultural system of the country that it would be hopeless to try to change it even were it desirable, which I do not think it is.

To understand this system of disposal it is necessary to understand that the staple crop in Japan is rice, and to have at least some idea of the way in which rice is grown there.

The ground has first to be levelled for irrigation, not of the kind that we are accustomed to at home, but of such a kind that there may be a uniform depth of several inches of water all over the surface during the time of year that irrigation is necessary. This is accomplished by accurately levelling the fields and surrounding them with low banks of earth or turf.

The rice is sown in only a small patch, generally in the corner of the field, and during the time that it is sprouting the rest of the land is heavily manured with the mixture of fæces and urine mentioned above. No other manure is used, and the consequence is that undiluted ordure is of the highest value. This is well illustrated by the fact that a country house is sometimes let at a certain rent when occupied by the rentee, but with the condition that a certain additional rent is to be paid in the event of his absence.

The manure is not used fresh, as it is not considered to be in the right condition till it has fermented for at least a month. To allow this fermentation or decomposition to go on, enormous stoneware pots are sunk in the ground at the edges of the rice fields. The comparatively fresh ordure is emptied into these, and remains in them till it is in the proper state for use.

At about the end of June, or the beginning of July, the young rice, which has sprouted to a height of several inches, is taken out of the little patch where it has grown, and is planted sprout by sprout in the manured ground, a certain distance being maintained between one plant and those on the four sides of it.

From the time that the rice first sprouts till it has attained its full growth, that is to say for some four months or so, the fields have continually to be irrigated. It is necessary to supply water in such quantity as would supply a depth of about half an inch over the whole irrigated area every twenty-four hours, and this water must be comparatively pure.

Of course only low lying and comparatively flat land is available for such cultivation. Fortunately, the time of heaviest rainfall corresponds, in Japan, with the time that irrigation is necessary, and there is, therefore, seldom difficulty in getting water enough; but there are, in some parts of the country, considerable reservoirs of ancient construction, made by damming watercourses, to hold a reserve for irrigation purposes, and there are many extensive canals for carrying the water to considerable distances from rivers and lakes. The actual country irrigated is, of course, of necessity, a perfect network of distributing channels.

So far it will, I think, be granted that there is not of necessity anything very insanitary. As a matter of fact the farmers and peasants who live near the "paddy fields" enjoy remarkably good health.

It is at the other end, at the place of collection, and especially in large towns, that the thing is at fault. The ordure is allowed to drop direct into large stoneware pots—holding perhaps on an average six or eight gallons, often more—sunk in the ground, and these are not, as a rule, emptied till they are full, or nearly so, by which time the contents are, of course, in an advanced state of decomposition. Moreover, no efficient precautions are taken to prevent occasional overflow or spilling, and the ground immediately around the pot is generally in a very filthy condition.

It is perhaps worth mentioning that the houses are, as a rule, of one or two storeys only, and that all the "sanitary arrangements" are generally on the ground floor.

When the pots are full, the ordure is removed in large wooden pails which are carried on hand carts, or one hanging from each end of a pole borne on the shoulders of a man. The pails are covered, but that the covers are not air-tight is amply demonstrated by the smell that greets the nostrils as a manure cart passes.

All this is very bad, but I think that it is quite curable, and that it is, after all, not the greatest evil. It would only be necessary to introduce the use of small clean receptacles carefully arranged, and to arrange for the emptying of them at very short intervals before decomposition had time to set in, and to carry the ordure to the country in well constructed vessels with air-tight lids, thoroughly cleaning and disinfecting these vessels each time that they are used, and there would be but little if any danger to health from that part of the disposal system.

The dry-earth system is, I may mention, out of the question, as the earth would prevent the decomposition or fermentation of the ordure that is necessary for the particular system of rice cultivation adopted in Japan.

The greater evil that I mentioned above is the way in which the residue of the sewerage is disposed of at present. And here we are face to face with that deep-rooted and apparently irradicable stupidity which makes people who ought to know better continue, after all that has been said and written on the matter, to ignore the fact that ordure is only a portion of the sewage that must be disposed of somehow or other; that judged by weight of solids it is far even from constituting the greater part of the sewage, and that, whatever means be taken to dispose of it, it is nevertheless necessary to provide means for the disposal of the rest of the sewage also. There scarcely passes a year at home, but some brilliant genius, whose chief qualification is that he has given no previous attention to sanitary matters, comes forward with some great scheme for the easy disposal of the ordure of towns, ignoring entirely the fact that there comes into every town say an average of 25 gallons of pure water per head per day, that it is there converted into impure water or sewage, and that it, as well as the ordure, must be got rid of. Here (in Japan) as might be expected, several self-constituted advisers have come forward and have advocated various improvements in the methods of disposing of the ordure. These have all been more or less excellent, doubtless, but the mistake has been that they have all ignored the rest—that is to say by far the greatest and most troublesome part—of the sewage.

The Japanese themselves have, however, for some time, recognised the necessity of some efficient means of getting rid of the liquid portion of the sewage, and actually sewered the greater part of Yokohama and a small part of Tokio some years ago. The work was well done, and the only fault was that the sewers were greatly too large.

But still, in nearly all towns the condition of

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affairs is lamentable. There is nothing in the way of sewers but open channels or ditches, sometimes uncovered, sometimes covered with loose planking. These ditches pass immediately in front of the houses at a distance of only a foot or two from them, they receive the whole of the sewage except that that has already been described as carried to the fields; they are either of rough stone or with planked sides, and are, of course, in neither case either self-cleansing or water-tight.

Of course these ditches of necessity have the same fall or want of fall that the street happens to have. They discharge eventually into the nearest stream or canal that happens to be of such a level as to be able to receive them, or, in the case of sea-coast towns, into the sea. As might, however, be expected, the greater part of the sewage never gets this length. The greater part of the fluid soaks into the ground, and the solids remain in the ditches, whence they are removed by hand from time to time. Indeed, in the case of one or two large towns, I have seen the outfalls of the ditches quite dry, except at times of heavy rain. In such cases it may be said that the whole of the sewage finds its way into the soil of the town, which must soon become "sewage sick." It is not too much to say that the soil on which most of the large towns of Japan stand must be sewage-sodden, with the result, of course, of contaminating the air both inside and outside of the houses.

This is bad enough, but the worst thing of all is that in most cases the water for all domestic purposes is drawn from shallow wells dug in this soil. The water, of course, is simply dilute sewage. This is not the case in all towns. In many water is carried from rivers or streams in open channels. As, however, in these cases the water runs in the open channels through the streets of the town it naturally gets much contaminated before it is used.

Water supply.

In Tokio, which has a population of nearly a million and a half, and covers an area nearly as large as London, there is a complete system of wooden pipes for water distribution. These are not bored from the stems of trees, as the old London pipes were, but are of square section built up of four large planks. The water is carried in a large open channel to the outskirts of the town, and then enters the wooden mains. It is very pure at the lower end of the open channel, but it suffers contamination afterwards, partly, probably, in the wooden pipes themselves, as the wood is always decaying, but more on account of the fact that the old wells have been used throughout the town as tanks for the storage of the water without any efficient means being taken to prevent the soil water from leaking into them. This is well illustrated by the fact that an investigation made some time ago showed that some of the wells that were supposed to be supplied from the mains were not, in fact, connected with them at all; yet there had been no complaint of want of water in these!

Now, after I have described the systems of sewage disposal and of water supply in Japan, the surprise of most will probably not be that there are frequent epidemics of cholera, and that the death-rate from zymotic diseases is somewhat high, but that the people live at all. I can only say that, if the systems just described are at present very bad, there are also many circumstances exceedingly favourable to the health of the Japanese people.

The first of these is a temperate and excellent climate. Perhaps it is rather too much to call the climate *quite* temperate, as the two months of July and August are really hot, the thermometer frequently rising above 90° Fahr. in the shade, and there being, moreover, in low-lying places, much dampness with the heat; but it is by no means tropical, and with the exception of the two months mentioned there is nothing left to be desired in the way of climate. The winters are, in the matter of temperature, much like our English winters, but that, the sun shining brightly every day, little or no ice ever forms. I speak now of moderate elevations only, and leaving out of consideration the northernmost of the three great islands constituting Japan, which is but thinly populated. In it the winters are rather severe.

Climate.

I need scarcely say that there is nothing in the way of London fog. The atmosphere of Tokio, in spite of its size, is at all times very clear, but in winter its clearness is something that never ceases to be a marvel to me. The great mountain Fuji is at a distance of about 60 miles from Tokio, yet in winter time I have seen it, looking along a street, standing up like a great sugarloaf, so clearly that it is not possible to believe that one could have more to do than to walk to the end of the street to step on to the base of the cone!

Another thing that must be favourable to the health of the people is that the streets of the towns are for the most part comparatively wide, the houses being low, and the population being thus by no means very dense. The lowness of the houses is partly on account of the very frequent earthquakes.

The almost complete absence of horse traffic in the towns must, on the whole, be a favourable circumstance, as the result is the absence of the large amount of manure that has to be removed with so much trouble from the streets of European and American towns.

I think, however, that the greatest saving circumstance lies in the designs of the houses, and in the fact that they are not only not sunk in the ground, but that they are actually raised, on posts or sleeper walls, some distance above it. "Sunk storeys," I have not the slightest doubt, are a mistake, from a sanitary point of view, everywhere, but I cannot doubt that they would be terribly fatal in their results in a case, for example, such as Tokio, in which the soil is so thoroughly contaminated.

Dwellings.

To form an idea of the advantage of Japanese houses over European in the matter of non-liability to draw air from the soil below them, it is necessary to have some idea of the design of such houses. It will be best understood, probably, by taking the very simplest case possible—namely, a house of one room.

In the first place, it is necessary to understand that the size of the room must correspond exactly to a certain number of "tatami," the mats that are to form the covering of the floor. These are solid plaited straw mats of about 3 inches thick, and measure 6 feet by 3 feet. The size of the room must, therefore, be a multiple of 1 by 2 yards.*

A small room, for example, will be an "8-mat room," and will measure 12 feet square. You will have an idea of the type of a Japanese house reduced to the very simplest possible, if you imagine a platform 18 feet square raised about 2 feet above the ground on posts, and covered with a tile or shingle roof supported above this platform by the continua-

* Occasionally a half mat is introduced.

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tion upwards of these posts. The 8 mats occupy the centre of the platform, and are surrounded by a width of 3 feet on all sides. Around the mat space there are a set of sliding doors a little less than 6 feet high, consisting of light wooden frames, with thin diaphanous unglazed paper stretched on them. These doors can be opened or closed at will, and it is customary to have them all open in warm weather, so that the house then becomes merely a platform with a roof supported on posts.

Around the outer edge of the platform there is another set of sliding doors of wood. These are closed only at night, being removed during the day-time. The space of 3 feet between the inner and the outer sliding doors forms the veranda.

Of course, as an actual fact, except, perhaps, in the case of a summer-house, or something of that kind, the structure is never quite so simple as this. In the first place, it is seldom, especially in towns, that the veranda, with its double row of sliding doors, goes round the whole four sides of the house. Again, there are generally not only one, but many rooms. These are divided from each other either by partitions, or by sliding doors made of light frames with thick opaque paper stretched on them, on which paper designs are generally painted. It is always so arranged, however, that, in the case of every room, at least one side can be entirely opened to the air.

Again, of course there are kitchen premises of some kind or other, although in the poorest houses they simply consist of a part of the single room unprovided with mats. In all cases they are of the simplest description.*

It will be seen that there is little chance that the air of the house will be drawn direct from the soil. There is the space underneath the floors, and then there are the mats, which are so closely plaited, and fit so exactly together that they must be pretty nearly air-tight, but further there are no fires or stoves with chimneys that would cause a vacuum in the house. The Japanese trust mostly to warm clothes and heavy quilts, and to the fact that their system of sitting on their legs on the floor keeps these lower limbs warm, to keep out the cold. The only form of fire used for warmth is what is known as the "hibachi," which is a bowl or box of either brass or wood filled with pure white wood ash, in the centre of which a little heap of charcoal glows. This is really barely sufficient to warm the fingers, and foreigners generally suffer intensely from cold in winter if they try to live in purely Japanese houses. The Japanese themselves do not, however, so suffer.

Where cooking is done on a large scale, wood is used as fuel, but even then there is no chimney, but merely an opening in the roof above the fire.

Ventilation.

There is no special provision for ventilation in the houses, and the absence of chimneys means the absence of one of the means whereby a certain amount of ventilation is, of necessity, obtained in European houses during winter; but, on the other hand, the construction of the houses is such that there is always a vast amount of accidental ventilation—in fact, often too much. Foreigners occupying Japanese houses generally suffer from draughts more than from anything else.

Of course, in summer time, when all the sliding doors are opened, there is an atmosphere the same as that of the open air. Even when the inner paper doors are closed, as during the day-time in all but hot weather, the ventilation is more than ample, as the paper used is very porous. Even when all the doors are closed there is much more ventilation than might be expected. Probably a good deal of air will pass through the doors, which are of exceedingly thin wood (only about ¼ inch); then there is generally a slight space between them, and they do not, of course, fit absolutely like a slide-valve at the top or the bottom. I estimate that there is very likely an average of 12 square inches of area of ventilation around each sliding door, and it will be seen that, as there are generally many of them to each room, the amount of ventilation area is quite fairly large. Besides all this, the space above the inner sliding doors up to the ceiling is often filled in with open scroll or lattice work only, and the entrance door is often lattice-work only.

There can be no doubt that in the case of the houses of the very poor, in which there is much overcrowding (the inmates having sometimes only one mat a-piece as sleeping-room), there is much harm done by want of ventilation, but in the case of even fairly large houses it seems to be sufficient. This is indicated by the facts that, although there is no provision for carrying away the products of combustion of the charcoal burned in the "hibachi," there are not only no cases of charcoal-poisoning in Japanese houses on record, but the people do not suffer even from such minor ailments as might be expected from the burning of charcoal in closed rooms—for example, headaches and drowsiness—and that there is seldom, in a Japanese room, that "stuffy" smell that one recognizes so often at home from want of ventilation. In fact, the ventilation of Japanese houses at the worst must be pronounced to be much better than the ventilation of the average of English houses.*

Another thing that must go far to neutralize the evil effects of the defective sanitary conditions already described in the intense cleanliness of the people. This extends both to the houses (with the exception of the privy already described) and to the persons of the people.

On the veranda or mats of the houses only bare feet or those covered with clean linen socks are allowed to tread, and they are kept in a state of absolute cleanness. No tables, chairs, or beds are used, but the people work and eat sitting on the mats, and sleep on them at night, covered with a thick quilt in time of cold weather, a second quilt underneath qualifying the hardness of the mats.

Bathing.

From the very day of his birth every Japanese has a hot bath at least once every two or three days, in most cases every day, and in many cases several times a day.

The bath is used very hot, and the operation consists in a thorough scrubbing with a cloth and hot water on the floor at the edge of the bath, followed by a dip in the water up to the neck for as long as the sensation may be pleasant. Soap has been introduced from the West only within comparatively recent times, and is by no means generally used. Moreover, it is not needed, the great heat opening the pores of the skin, and resulting in a more complete removal of dirt without soap than is possible with any amount of soap at ordinary temperatures.

* This must be taken as a typical example only. In remote country districts the construction of the houses differs considerably from that described.

* I have it on the authority of a physician who has long had an extensive practice in this country that he finds much more sickness in brick houses of European style than in houses of true Japanese construction.

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I cannot tell what is the maximum temperature of the Japanese bath. I have been told that the Japanese can bathe in water at a temperature of 135° F., but I doubt this. I have found the temperature of baths at hotels and tea-houses, prepared for the Japanese, to have, as a rule, a temperature of 110° to 115° F., but frequently it is as high as 120°, and a Japanese can quite easily go into water at this temperature.*

One will see young girls stepping into and sitting down in a bath that will scald one's fingers, and will even see babies that are too young to walk dipped in the same.

The first foreign medical men who came to Japan could not but think that this bathing in excessively hot water was a source of great danger, and tried to persuade the Japanese to stop it. Regulations, which were most distasteful to the people, were issued to keep down the maximum temperature of the water (to 100° F., I think) in the public baths, but the best medical authorities in the country, both foreign and Japanese, have since declared the custom quite harmless, and, indeed, beneficial to health. The old-fashioned English notion that it is dangerous to go into a bath at a temperature over 98° F. (blood heat) seems to be, like a good many other fine old crusted ideas, an entirely mistaken one.

The ability to go into a bath at a temperature that would at first seem simply sufficient to parboil any human creature is easily acquired. It is only necessary to have a little perseverance, increasing the temperature of the bath by a degree or so a day. I have thus myself acquired the ability to go into a bath at a temperature of 120° F., although I much prefer one ten degrees less hot.

One who has not tried it can have no idea how refreshing a very hot bath is, and especially in hot weather. One can remain in it for only three or four minutes at the outside; there is none of the enervating effect that there is from the tepid or so-called "hot" bath of England, but, on the contrary, a feeling of increased vigour.

A thing I cannot understand is that, whereas in very cold weather the effect of a very hot bath is to so warm the body that one can sit in comfort for some two or three hours after coming from it even in a Japanese room without feeling the cold, in summer the effect is (from reaction, I presume) distinctly cooling.

Every Japanese who can afford it has a bath in his house for the use of himself and his family, the water of which is changed once a day. Those who cannot afford to have a bath at home go to the public baths, of which there are great numbers. In the olden times the public baths were all open to the street, and both sexes bathed together. Now, out of deference to the prejudices of foreigners, the bath-houses have all been closed in in large towns, and there are opposite sides for male and female bathers. In the country, and especially in the case of mineral springs, the baths are still generally open, and the sexes bathe together. There is, however, no indelicacy or impropriety in connection with this custom.

The time of bathing is generally when the day's work is done. At the same time the dress is changed, that which is put on at the bath being frequently worn till next morning.

In hotels, tea-houses, and the public baths the water is completely changed only once a day, and it is probable that there is occasional communication of infectious diseases on account of many people bathing in the same water. It would certainly be an improvement to have much more frequent changes of the water, but there can be no doubt that, even as it is, the advantages gained from the cleanliness enormously more than counterbalance any disadvantages that may arise from many people bathing in the same water.

The hot mineral springs of Japan are famous. There are many of them, and some of them have powerful medical effects. The subject is an interesting one; but as it comes rather under the heading of curative medicine than of sanitation, I refrain here from dilating on it.

Concerning the impure water that I have already referred to, I am under the impression, although I am by no means certain of it, that much less unboiled water is drunk in Japan than in England, the custom of drinking tea at all times of the day certainly tending to minimize the quantity of cold water drunk. In fact, it is probable that a large proportion of the population never drink cold water at all. Of course, this is a certain safeguard where the water is so very bad as I have described it.

Diet.

Japanese food forms an eminently healthy diet—at any rate, for those who are actively employed. It is for the most part vegetable; flesh meat is scarcely eaten at all, but fish is largely used.

Rice is the staple diet, and the food of the great bulk of the people consists of little more than rice boiled without either salt or sugar, but flavoured with strong-tasting, raw vegetables of the cucumber and radish kind, and the sauce known in England under the name of "soy," with occasionally some dried fish. By those who can afford it fish and eggs are largely used, and many kinds of soup are made with fish, eggs, vegetables, &c.

As luxuries many things that seem very strange to us are used—such, for example, as raw fish, sharks' fins, seaweed, lily roots, young bamboo shoots, and "bean custard." Salt is much less used than with us, sugar more, or, at least, more diffusively. Sugar is used in what seems to us a very extraordinary way. I have said that meat is very little used, but when it is it is generally cooked with sugar; so, also, is fish frequently, not to mention potatoes and eggs.

What Europeans mostly find the want of when they have to live on Japanese food is wheaten bread, which is quite unknown, and all milk products. The Japanese do not use milk either unsophisticated or in any other form, such as butter or cheese, and most of them dislike the taste of it intensely, and say that it "stinks." It is given like medicine in the hospitals.

The tea that has already been mentioned is a variety of green tea; it varies in price from three or fourpence per pound to over £2. The finer kinds must not be made with boiling, only with moderately hot, water. It is used very weak, and without either milk or sugar.

Besides this the national beverage is "saké," a light wine or strong beer, according as one may call it, made by fermenting boiled rice. It contains alcohol in quantity varying from about 5 to about 15 per cent. It is not, so far as I know, ever adulterated, and is as wholesome, or as little unwholesome, as any alcoholic beverage. It is generally drunk hot, and is used by practically all men, but in great moderation

* Since I wrote the above I have been told by Dr. Bealz that he has found the temperature of the hottest bath in which the people dip at Kusatsw to be 54° Cent., which is a little under 130° F. Kusatsw is a famous mineral spring, and as it is well known that even the Japanese go with difficulty into the hottest water there, 130° F. may probably be said to be about the limit of temperature.

compared with the way in which alcoholic beverages are used in England. It is scarcely drunk by women at all. The Japanese are an exceedingly temperate race. A drunken man is a thing very rarely seen, and, so far as my observation goes, the use of alcohol as a stimulant "to work on" is a thing quite unknown.

It will be understood that I am writing of the Japanese who have retained their national customs, as the great mass of them have, at least in the matter of eating and drinking; but all kinds of foreign food and liquors are purchasable in Tokio and in all large towns. The former are, however, used by a very small proportion of the people only, except on such occasions as they meet foreigners. The same may be said of the latter, with the one exception of beer. The lighter kinds of the "lager" type of beer are considerably used throughout the whole country, and a good deal of it is brewed on the spot.

Dress. The Japanese dress, consisting for both sexes of one or more flowing robes, folded over in the front, and held together by a sash round the waist, is at least as healthy as European male dress, and is much more healthy than the dress of women at home, besides being infinitely more graceful. It is warmer than either in winter and cooler in summer. It is not, however, as convenient as male European attire for any kind of hard work, and is not, in fact, used by the working people during working hours. The men prefer, whenever the weather is not very inclement, to work with nothing but a waist-band; at other times both men and women, when engaged in hard work, wear tight-fitting trousers, and a sort of loose "blouse." European dress is worn by officials during business hours, by soldiers, police, students of the University, and the higher schools in large towns, and by a considerable proportion of the wealthier classes in general. It has been adopted also by a few ladies.

So much for a brief description of what may be called the sanitary surroundings of the people. It is necessary to give, further, a little information as to the effects of such surroundings on their health. Unfortunately statistics of any accuracy of the kind wanted have not been made for long time enough in this country to make it quite possible to give information as definite as might be considered desirable. I append, however, in the form of appendices, two tables that have been kindly made out for me by Dr. Nagayo Sensai, of the Sanitary Bureau, Home Department. One gives statistics as to the various causes of death throughout the whole country, and in each of the seven principal districts. Unfortunately, the headings selected for the classification are of such a nature that the statistics are rendered of little use to us so far as the cause of disease—considered from a sanitary point of view—is concerned, but the figures in the lowest line, giving the death-rate per thousand for the whole empire and for the seven principal districts, is very instructive.

Vital statistics.

It will be seen at once that it is very low. Thus the death-rate of the whole empire is only at the rate of 19·33 in 1,000, whilst in the least healthy district it is only 24·22 in 1,000.

The Tokio Fu, or district of Tokio, may be said to consist of but little more than Tokio itself, an enormous city as I have already said, and with both water supply and drainage bad, yet even in the case of this the death-rate is only 21·08 per 1,000.

The death-rates given—those of 1888—may be taken as those during a normal non-cholera year, and a little must be added to give an idea of the average, including deaths from the cholera epidemics, of which I shall have to say a little further on. I estimate, however, that the necessary addition will be considerably less than 1 in the rate per 1,000, raising that of the average of the whole empire to say 20 per 1,000, which, it is needless to say, is exceedingly low.

Lacking statistics of the numbers of deaths from the diseases that are generally attributed to insanitary conditions, or are supposed to be aggravated by them, the only thing I can do is to give in general terms the results of my own observations, and of what has been communicated to me by friends, and here I wish to record my gratitude to Prof. E. Beals, M.D., to whom I am endebted for a great part of the information contained in this paper. Dr. Bealz has lived for more than thirteen years in the country, and an extensive private practice besides professorial and hospital duties have given him exceptional opportunities for gaining information.

In the first place as to the cholera that I have already mentioned. The disease occurs in the form of an epidemic spreading more or less widely over the country at intervals of only a few years. The form of the disease is Asiatic cholera, but I am told that it is less fatal than in some hotter climates. The epidemics are at times very severe. As an example, in the epidemic of 1886 there were recorded no less than 154,328 cases, and there can be no doubt that a considerable number passed unrecorded. There were 109,758 deaths, and whilst the disease was working its greatest destruction the deaths in Tokio alone were, for some time, at the rate of over 200 per day, and even reached a total of 256 on one particular day.

Cholera.

This particular epidemic was the severest that there had been for a considerable time, and there has been none since.

That cholera is imported to Japan from China is a thing of which there can, I think, be little doubt; but I have still less doubt that it spreads in the epidemic form on account of the unsatisfactory sanitary condition of the country, and especially on account of the impurity of the water in the larger towns.

There are frequent epidemics of typhoid, but I have not heard of any of these that has been either very severe or exceedingly wide spread. Further than this it is difficult to say more than that besides typhoid, diphtheria, and diarrhœa are commoner than they should be.

Phthisis needs a word or two particularly, as a striking peculiarity has been observed in connection with this disease by Dr. Bealz, who tells me that the disease is comparatively very rare amongst the poorer classes, but is common amongst the well-to-do and wealthier classes. The explanation of this, as given by Dr. Bealz, is that the national food, strong in carbon, is excellent for a man who takes sufficient exercise, but is not good for one who takes none, leading to that state of general weakness which predisposes to consumption. It is an undoubted fact that the wealthier Japanese, of both sexes, neglect, as a rule, to take sufficient exercise. The rest of the people, on the other hand, take sufficient, in many cases excessive exercise. The jinrikisha man may be taken as the type of an over-exercised man. He draws a hand carriage with one or even two passengers in it, and he goes at a

Phthisis.

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run of from five to eight miles an hour. A run of 20 or 30 miles is quite an ordinary day's work for such a man, and on occasions he will do two or even three times as great a distance. Frequently a passenger employs two men to draw his jinrikisha, but, as it is expected that the speed will be increased in this case, the exercise is no less excessive in one case than in the other.

It is a popular error here that the mortality from consumption amongst these men is enormous, but Dr. Bealz tells me that the very opposite is the case. Consumption is very rare amongst them. Still the over-exertion is very fatal. They cannot keep up for more than a few years, and generally retire with hypertrophy of the heart.

The performance of the jinrikisha men is proof, if proof were needed, of the exertions that can be made on a purely vegetable diet. Their food consists almost exclusively of rice.

The table forming the next appendix is of great interest, as showing the number of deaths at different ages. It will be gathered from it that the very low rate of mortality already mentioned is not due to a long average life of the Japanese, but to a low infant mortality. The lowness of the infant mortality as indicated by the table is again exactly in opposition to popular belief, which is that the death-rate of children is very high.

Infant mortality.

The lowness of the infant mortality is probably due chiefly to the very great attention paid to the children by their mothers, to the fact that no substitute for mother's milk is ever used in bringing them up, and that they are nursed till they are from two to three months old. The habit that Japanese women have of carrying their children in a sort of bag on the back, enables them to have the little creatures with them wherever they go without apparent inconvenience. They appear to be able to go about their regular work, whatever it may be, with a child on their backs without greater difficulty than if they were unburdened. The child is thus almost always with its mother, and has a deal of the open air.

The long nursing probably accounts for another fact—once more in exact contradiction of popular belief—namely that, although the Japanese—especially the women—marry very early, the families are, on the average, very much smaller than those of Europeans. It is not true, as I have seen stated, that an artificial check is used to keep down the size of families.

It may be well to mention here that, although concubinage is a recognised institution in the country, a man who is married being allowed to take a second woman into his house and register her as his concubine, the practice is carried out by only a very small proportion of the wealthier classes. It is the universal custom for men to marry, and that at an early age. I have no figures by me giving the average age at marriage, but I know that the parents of a young man begin to think it time he got settled down in life when he reaches the age of about twenty, those of a girl when she is sixteen.

Social customs.

Prostitution is a recognised institution, but is regulated with much greater thoroughness than in any other country in the world. It is confined to certain parts of all large cities; districts are set apart for the practice, and the inmates of all houses are subject to periodical medical examination. The actual number of prostitutes as compared with the population is very small. The ancient and barbarous custom whereby the parents of a girl could sell her into prostitution has long been abolished.

A word should be said about skin diseases, as one of the first impressions that a foreigner gets on arriving here is that they are very prevalent. This arises from seeing a number of children with their heads covered with a most revolting looking eruption. I have it on good authority, however, that this is a comparatively harmless complaint brought about by the custom of closely shaving the heads of all children, and possibly by the use of unclean razors. Skin diseases as we know them are very rare.

There is great deal of blindness, but I am told that this is due to nothing in the climate or habits of the people tending to produce diseases of the eye, but that it is due to the want of knowledge of the proper treatment of such diseases that prevailed till quite recently, and that, moreover, the occurrence of blindness is becoming much rarer than it used to be.

So much for the Japan of the present—the end of 1889—but it is not to be supposed that a country that has wrought greater changes in its institutions in a quarter of a century than have been wrought by any other country in a like period of time will rest satisfied with sanitary matters as they are, and it may be taken as a sign of the anxiety that there is for improvement, that there is in the University, in addition to the chair of hygiene, one of "Sanitary Engineering" also.

Sanitary improvements.

Briefly described the improvements that are in progress or are proposed are as follows:—

In two large towns—Yokohama and Hakodaté——waterworks on the modern system have already been carried out, and in another—Nagasaki—they are in progress, whilst in almost every other large town schemes for new works have either been completed, are in progress, or are contemplated. In the matter of water supply Japan is particularly favoured by nature. The country is very mountainous, the rainfall is heavy—generally averaging something near 80 inches of rainfall in the year — and the greatest rainfall is during the hottest part of the year. It is generally easy to find a plentiful supply of water of excellent quality at no great distance from a town. It has been decided to carry out complete waterworks for Tokio, which will be amongst the largest in the world.

It may be interesting to know that, although there are not as yet sufficient data to give a precise figure, there can be little doubt that the quantity of water needed per head in Japan will be considerably less than that needed in European cities. Thus in Yokohama the amount actually consumed is less than 17 gallons per head. This is due to two things in great measure at least. No great amount is needed for manufacturing purposes in towns, and, although bathing is such a universal custom, it is not, as has already been explained, usual to change the water for each bather.

I have suggested, as a provisional allowance for towns of moderate size, 3 cubic feet per head per 24 hours, but it has been nearly decided to allow 4 cubic feet per head in Tokio.

I may, perhaps, be allowed in passing, to urge the advantage of the cubic foot as a unit in connection with water supply over the gallon. Apart from the fact that there are the two gallons—the American and the English—differing in the proportion of 4 to 5, there is the fact that all calculations for water-

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works involve the estimation of velocity of flow in lineal feet, and that it is much easier to deduce cubic feet from these as discharge than gallons.

The prospect of improvement in sewage works is not so immediate as that of water supply. The latter is considered the more immediately pressing of the two. Still schemes for modern sewage works have been got up for many cities. I have myself, working under the instructions from the Home Department, got out schemes for some six or eight large towns including Tokio, and I have no doubt that a few years will see some or all of these given effect to.

Japan has already acquired the title of "the Sanatorium of the East." I have no doubt that it will, when the improvements that I speak of are carried out, rank as one of the most healthy, if not the very most healthy, country in the world.

APPENDIX I.

TABLE SHOWING THE NUMBER OF DEATHS BY CAUSES IN THE EMPIRE AND THE SEVEN PRINCIPAL DISTRICTS, 1888.

Causes of Deaths.	Whole Empire.	Districts.						
		Tokyo-fu.	Kyoto-fu.	Osaka-fu.	Kanagawa-ken.	Hyogo-ken.	Nagasaki-ken.	Nūgata-ken.
Infectious Diseases	45,715	3,574	650	1,941	1,139	1,771	1,472	1,911
Constitutional Diseases	127,213	4,397	2,921	6,894	2,891	3,353	1,631	5,102
Diseases of Skin and Muscle ...	11,654	152	407	493	292	678	348	345
,, Bone and Joint ...	6,412	117	254	207	82	443	409	160
,, Circulatory Organs ...	27,124	1,010	1,097	1,582	472	1,700	727	947
,, Nervous System ...	171,992	9,435	3,714	6,836	5,592	5,938	2,506	8,189
,, Respiratory System ...	128,613	6,306	3,557	5,040	3,225	4,996	2,818	5,589
,, Digestive System ...	182,613	6,080	4,490	6,027	3,851	7,509	3,540	7,545
,, Genito-Urinary ...	26,145	794	933	1,135	565	1,353	572	820
Surgical Cases and Violence ...	16,226	415	310	585	350	690	228	918
Poisonous Affection	314	28	4	13	14	6	1	8
Causes Unknown	12,336	38	88	277	11	1,360	91	14
Total	756,357	32,346	18,365	31,030	18,484	29,797	14,343	31,548
Death-rate per 1,000 of Population	19·33	21·06	20·99	24·22	19·50	19·58	19·06	18·94

Population of Whole Empire and the Seven Districts:—Whole Empire, 39,510,146; Tokyo-fu, 1,534,574; Kyoto-fu, 875,084; Osaka-fu, 1,281,150; Kanagawa-ken, 947,766; Hyogo-ken, 1,521,817; Nagasaki-ken, 752,402; Nūgata-ken, 1,665,378.

APPENDIX II.

TABLE SHOWING THE NUMBER OF DEATHS BY AGES, 1887.

Age.	Deaths.		Age.	Deaths.		Age.	Deaths.		Age.	Deaths.	
	Male.	Female.		Male.	Female.		Male.	Female.		Male.	Female.
1	60,076	51,672	29	2,204	2,540	57	4,316	3,162	85	1,631	2,361
2	24,876	22,538	30	2,374	2,710	58	4,335	3,467	86	1,179	1,806
3	12,923	12,113	31	2,435	2,785	59	4,735	3,592	87	1,031	1,522
4	9,305	9,103	32	2,400	2,807	60	5,029	3,924	88	843	1,301
5	6,516	6,134	33	2,357	2,746	61	4,929	3,971	89	611	959
6	4,532	4,210	34	2,463	2,859	62	4,822	3,758	90	444	793
7	3,508	3,318	35	2,546	2,900	63	5,293	4,240	91	348	613
8	2,842	2,457	36	2,596	2,922	64	5,423	4,403	92	270	433
9	2,353	2,166	37	2,364	2,644	65	5,301	4,552	93	155	331
10	2,093	1,909	38	2,542	2,864	66	5,804	4,810	94	119	247
11	1,870	1,804	39	2,841	3,067	67	5,122	4,586	95	84	172
12	1,857	1,736	40	2,803	2,988	68	5,540	4,886	96	76	135
13	1,594	1,593	41	2,934	2,930	69	5,799	5,215	97	38	86
14	1,554	1,652	42	2,885	2,445	70	5,240	4,836	98	35	63
15	1,713	1,775	43	3,118	2,933	71	5,308	4,925	99	25	50
16	1,593	1,766	44	2,728	2,521	72	5,448	5,264	100	6	12
17	1,693	1,871	45	3,263	2,707	73	5,028	5,117	101	4	2
18	1,969	2,089	46	2,794	2,340	74	4,978	5,009	102	4	5
19	2,143	2,397	47	3,217	2,387	75	5,048	5,300	103	2	7
20	2,789	2,840	48	3,195	2,386	76	4,579	5,056	104	1	—
21	2,544	2,742	49	3,126	2,245	77	4,860	5,239	105	—	1
22	2,518	2,696	50	3,080	2,276	78	4,131	4,659	106	—	1
23	2,597	2,963	51	2,888	2,181	79	3,854	4,541	107	1	—
24	2,534	2,863	52	3,344	2,495	80	3,849	4,550	112	—	1
25	2,252	2,511	53	3,700	2,773	81	3,316	4,090	Unknown	733	489
26	1,996	2,282	54	3,735	2,709	82	2,929	3,806			
27	1,955	2,126	55	3,862	2,937	83	2,906	3,734			
28	2,160	2,539	56	4,502	3,337	84	2,388	3,040			

Total number of deaths:—Male, 387,400; Female, 366,455; total, 753,855. Average age of deaths—37 years and 4 months.

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SINKS, WITH SPECIAL REFERENCE TO A METHOD BY WHICH GREASE IN CONNECTION WITH THE SCULLERY SINK CAN BE EFFECTUALLY DISPOSED OF.

By J. R. ANDERSON, C.E., Mem. San. Inst., Cert. Surv., San. Inst.

THE treatment usually given to an ordinary sink is to terminate its waste-pipe over a stoneware gully of approved form fixed in the open air, in order to securely disconnect it from the soil drain.

Although, however, by this practice the entrance of drain-gas into the house, by way of the sink-waste, is rendered a matter of practical impossibility, it is highly desirable at the same time that a means should be provided by which the air in the pipe might be prevented from gaining access to the dwelling.

This desideratum can be, and usually is, effected by fixing a lead S or P trap under the sink. It is quite obvious how very necessary the existence of such an appendage is, since the waste-pipe of a sink must sooner or later become foul in consequence of fatty and soapy matters sent down it. Particles of fat, probably from soap, are apt to adhere to the sides of the pipe and decompose. In consequence of the decomposition foul odours are given off, which cannot do less than pass up the pipe if without a trap, and diffuse amongst the air in the apartment in which the sink is located, causing an unpleasant smell. The air in the dwelling is nearly always lighter or more rarefied than the outer, so that ventilation, through a difference of temperature and the agency of the sink-waste, as a consequence takes place.

It is advisable, and also the best plan, to fix the trap immediately under the sink, in order to lessen the space between the grating over the waste and the upper surface of the water-seal.

The grating should always be fixed down tightly, so that no improper substance likely to choke the waste or trap could be made to pass through it. The trap should also be provided with a brass-screwed access eye on the underside of it, in order that in the event of an obstruction forming it could be removed without difficulty, by simply taking off the screw-cap, and inserting a light rod or cane. In addition to the trap, it is necessary, in all cases in which the waste-pipe is more than five or six feet in length, to provide ventilation for it, and also to prevent the water in the trap being syphoned out. This is effected by taking a lead pipe from off the out-go of the trap of the same diameter as the sink-waste, terminating it at a convenient point in the open air where any escaping smell would not be the cause of annoyance. By this means it is rendered possible for air to circulate freely throughout the whole length of the waste-pipe, permitting at the same time air to be drawn in from the top of the pipe in the event of a discharge being sent through the waste rather than through the trap. This ventilator by many receives the appellation of anti-syphonage or puff-pipe.

In the case of a scullery sink in a large house, it is essential that something in addition to the ordinary treatment should be provided. This something is a means whereby the grease sent down the sink in consequence of cooking, plate and dish washing, &c., might be speedily and effectually got rid of. In the time of barrel or brick drains, such an expedient was not deemed necessary, and the practice common at that period was to connect the sink-waste directly with the drain, providing a bell-trap for the mouth of it and sometimes a dip-stone or masons' trap at the foot. More often than not brick drains were directly connected to the public sewer or very imperfectly disconnected from it by a small cesspool. Rats, with which sewers are thickly inhabited, were at liberty to enter the drains and dispose of all matters of a fatty nature. By providing, however, proper stoneware pipe drains and isolation from the public sewer through the medium of a disconnecting trap, it becomes a somewhat difficult matter for a rat to effect an entry. Moreover, if grease is allowed to enter a properly constructed drain in any great quantity, the result is that the drain is likely to become choked, since grease at the outset, that is to say, at the time it is sent down the sink, takes the form of a thick fluid, which, on coming in contact with the cold inner surface of the drain-pipe, becomes solid and adheres to its sides; at first forming a partial obstruction, but gradually increasing in size until eventually the bore of the pipe is so reduced that absolute stoppage occurs. In order, therefore, that grease in its exit from the sink to the drain, with its attending disadvantage, might be arrested, grease-traps were brought out. Such traps at the present time are without number and very largely used. Many of these are provided with movable iron grids or boxes by which the collected matter might easily be removed.

The principle of the grease-trap is as follows:—A volume of cold water is retained in a vessel in order that the liquid grease on entering it might become solid, which, in a great measure it does, and rises to the surface where it accumulates, decomposes, and gives off foul gases until the time arrives at which the vessel is cleaned out.

When grease is collected in such a manner it is not an easy matter to devise a plan by which it can be dealt with or disposed of. In the case of town houses burial is not feasible, since ground is very limited; in the majority of cases no open space existing other than the usual back and front areas.

It is possible to get rid of the grease by burning it, but such a practice is inconvenient and somewhat disagreeable; therefore highly likely to become neglected. I believe there are certain firms in London who undertake the periodical emptying and cleansing of grease-traps, taking away the collected matter.

There exist certain laws or fundamental principles by which house-drainage should be governed, the first and the most important probably being "that all decomposing matter, as soon as it is placed in any appliance within the dwelling, should be carried away with the utmost possible speed to its destination." In the fixing of a grease-trap, however, this law is directly opposed, inasmuch as a grease-trap is no less than a miniature cesspool, and one of a particularly foul nature, retaining a quantity of decomposing sewage matter. Sewage matter includes the waste-waters of sinks. This rentention results in the fouling of the whole length of drain between trap and public sewer.

In a great many houses grease-traps are found situated in the scullery floor, and covered over at the ground level with an air-tight cover. The iron cover is often the reverse of being air-tight, allowing

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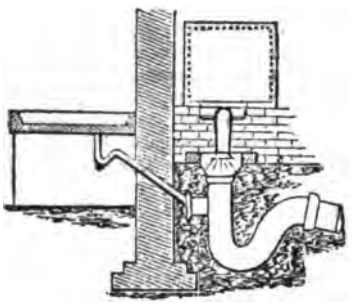
foul emanations to pass it and pollute the air of the place. Oftentimes a grease-trap is fixed and totally unventilated, the sink-waste having been trapped and terminated in it, in which case the trap would be highly likely to become syphoned out, and cause the waste-pipe to act as a ventilator for a time.

It is quite possible to dispose of grease without employing the services of a grease-trap or cesspool. An excellent method, and one which has been adopted in many cases with very efficacious results, will now be detailed.

The sink-waste is terminated over, or in, a four-inch self-cleansing trap of the form indicated in the sketch below (Buchan's), having fixed round it a coping of stone, or, better still, two or three courses of white glazed bricks. Glazed bricks are very smooth, and do not become foul, as is the case with stone or ordinary bricks, in consequence of asperities on the surface; hence a clean appearance is maintained.

The trap is usually fixed in an open area outside the scullery wall. The sink-waste should be made



as short as possible, which can be effected in most cases by fixing the sink close against the scullery outside wall and in a convenient position.

A syphon-action flushing-tank, of a holding capacity of some 50 gallons, is placed in a position in close proximity to the trap. The discharge-pipe is terminated immediately over the standing surface of the water in the trap, in order to break up and wash away any grease that might accumulate in it. The tank is regulated to discharge in accordance with the requirements of each individual case, that is to say, the regulation of the tank through the water supply is dependent on the amount of grease sent down the sink, and, of course, the amount of grease is entirely dependent on the habits of the cook, &c., and the number of inhabitants in the house.

With such an arrangement, in addition to the removal of grease, a decided advantage is gained, especially with houses in which the scullery sink is located at the upper extremity of the drain—namely, that the latter is periodically scoured from end to end.

Instances occur in which the fixing of a trap, such as is indicated in the above sketch, is not possible, in consequence of the requisite depth not being obtainable, due to the drain having been brought as near the ground level as possible, towards the upper end to obtain a sufficient fall for it. In such cases however, an ordinary stoneware gully may be made use of, forming round it as in the former case of coping, to avoid splashing. As much water as possible should be made to pass into the gully or trap, and oftentimes lavatory and bath wastes can be made to terminate over them, or even made to deliver into the flushing-tank, thereby rendering the waste-waters more valuable by being discharged with considerable force through the tank syphon instead of merely dribbling along the drain.

For establishments such as hotels, public schools, and institutions, it is desirable to adopt a flushing-tank of a larger holding capacity, this being regulated to discharge more often than the one in the case of an ordinary large house. A word in regard to the several methods in which flushing-tanks can be supplied with water. The most reliable and probably the best plan possible is to fix in the tank on the service-pipe a small brass screw-down cock with an inverted copper ball-valve or cock.

The screw-down cock after a little practice can be regulated to fill the tank in a certain and requisite number of hours. As soon as the tank is nearly filled the copper ball rises, and gradually opens the valve in connection with it, eventually opening it to full bore, allowing a large volume of water to pass through it and suddenly enter the tank. By this means the air in the syphon is more likely to be displaced, and a partial vacuum created, than would be the case with a mere dribble. Another good plan that can be adopted with an intermittent water supply, but probably not considered so by water companies, is to take a small service pipe from a point in the side of a convenient cistern, that is to say, one near at hand, about two and a half or three inches below high-water mark, so that, during that period of time in which the water is turned on to the house from the street main, the tank can be filled two or three times in succession, and once immediately after the water has been turned off.

A plan much adopted, but certainly not an effective one, is as follows:—A pipe with a closed end is fixed to the tank. In the closed end is pierced a small hole through which water can pass drop by drop into the tank. In the majority of cases the small perforation becomes choked, or furred up, thus neutralising the good effects of the tank. A valve or stop-cock should always be fixed on the service pipe between supply cistern and tank, so that in the event of repairs being executed in the tank or supply arrangement, the water can be easily shut off from it.

Should the fixing of the tank in the area be found inconvenient or impossible, due to an insufficiency of room, it may be placed in the scullery, either under or over the sink, in the latter case being supported by brackets of suitable description fixed in the wall. The tank-pipe can then, by the aid of a lengthening-piece, be taken through the wall, nosed down, and terminated over the water in the trap in the area. Oftentimes back areas do not exist in houses, when, by many, the construction of a twin drainage system is deemed essential; that is to say, a drain specially for soil, and another for rain and sink water, disconnecting the latter from the former by a proper form of ventilated gully or trap in the front area, providing also a further means of ventilation at its upper extremity. A method quite as efficacious and somewhat less expensive is to place in the scullery floor, near the sink, a similar arrangement of trap as was previously illustrated, keeping it as low as possible below ground level, and, at ground level covering it with an absolutely air-tight, galvanised iron plug-cover of small dimensions. The sink-waste and wastes of other sinks in the vicinity are led into the trap under the grating by side inlets. A rain-water pipe, or preferably two, bringing at the same time the bath, lavatory, and other waste-waters

received through hopper heads, must then be made to enter the arrangement, providing, by thus doing, a circulation of air throughout it, and the necessary atmospheric disconnection for the waste-pipes. The discharge-pipe of the flushing-tank is then taken into the trap under the cover and above the waste-pipes. As a consequence of the before-mentioned arrangement, a great advantage is gained; the drainage system is made less complicated by constructing one drain instead of two, in which case it is kept well flushed and cleaned.

The flushing-tank should always be provided with a wooden cover, and, when fixed in an exposed situation, protected from frost by a casing packed tightly with sawdust or hair felt.

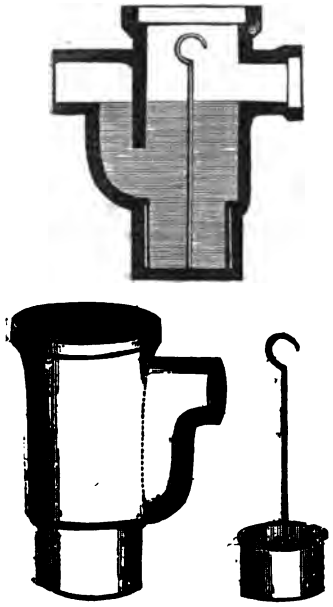
I do not approve of a combined flushing-tank and grease-trap, an arrangement often made use of. In such a case the tank is fixed underground, and the sink-waste taken into it.

Grease is deposited in the tank, and it becomes foul, thus requiring periodical emptying and cleaning; hence the practice is open to the same objection as has been brought against the plain grease-trap.

Houses of the ordinary size do not, as a rule, require an elaborate grease-disposing apparatus, the existence of an ordinary stoneware gully for the sink-waste being quite sufficient.

Even in large houses in which the sink is located near the front area and disconnecting chamber, the drain between the outgo of the trap and the public sewer being short in length, oftentimes by giving the scullery gully branch drain a good fall, and causing it to discharge straight into the trap by an open channel, grease can be got rid of without any special apparatus, since the waste-waters of the sink containing the grease in a liquid form pass rapidly into the sewer, not allowing sufficient time for the fat, &c., to congeal and settle in the drain-pipes.

A very suitable gulley for use in small houses for sink-wastes is shown in the following illustration in section. It is called Deane's gully, and has an iron box, to which is fitted a handle, thus making the process of cleaning very simple.



This gully when fixed, however, should receive periodical and systematic attention, the box being removed very frequently.

As regards the construction of scullery sinks, white glazed ware is the best material possible to use for this purpose.

Freestone has been and is much used for the manufacture of sinks, but it always presents a dirty appearance, and is difficult to clean. Moreover, the wear of stone is very considerable, so that in the long run it is economy to make use of glazed white ware, although at the outset a little more expensive than the other.

White glazed ware can be easily cleaned, and is durable, exposing to view all dirt that probably would not be so noticeable on a material of darker colour.

The scullery sink, the most important one, now being disposed of, a few words will be said in connection with the slop sink, the second in order of importance. In a recent issue, in a paper on water-closet appliances, it was pointed out that water-closets are often used as slop sinks, and a few general hints were given which might be observed in such instances. A slop sink requires very different treatment to that afforded to an ordinary sink since this appliance is oftentimes made a receptacle for matters equally foul as those for which a water-closet is used. This being so, a slop sink should be treated somewhat after the manner of a water-closet, that is, as regards trapping and form of waste-pipe.

The trap should be connected to the soil-pipe, if near at hand, and, if not, a separate down-pipe should be fixed with a ventilator, of the same size as the former, carried up to a point clear of the roof, or, at least, to some convenient point in the open air.

Many sinks are provided with a hot and cold water supply, in addition to the usual flushing means, which is doubtless a convenience, but with such an arrangement considerable care must be exercised in the selection of a suitable material for the construction of the waste-pipe. Lead is greatly affected by hot water, but in the adoption of a good thick pipe, say, some eight or nine pounds per foot super., or even heavier, a considerable amount of security can be obtained.

The co-efficient of expansion of cast-iron is very much less than that of lead—roughly, a little less than half as much. As regards a material to be used when expansion has to be taken into consideration, cast-iron is superior to lead, but not so in other respects.

Considering all things, however, it is by far the best plan to fix a slop sink without having a hot water supply over it at all. Should it be found necessary to have a hot water-tap alongside, an ordinary sink with waste-pipe ending in the open air can be fixed under it, and by the adoption of such a method the soil-pipe into which the slop sink is made to discharge is kept free from the injurious effects of hot water.

There are many forms of ready-made slop sinks in existence, many of them being furnished with fixed stoneware traps—that is to say, the basin and trap are formed in one piece. With the use of a stoneware trap of this kind the connection between its outgo and the soil-pipe must necessarily be somewhat weak and unreliable. Anyway, the joint is not equal, however made, to that between metal and metal. A lead trap should therefore be used under every slop sink and provided with a proper anti-syphonage pipe. One of the most convenient forms of slop sink is a

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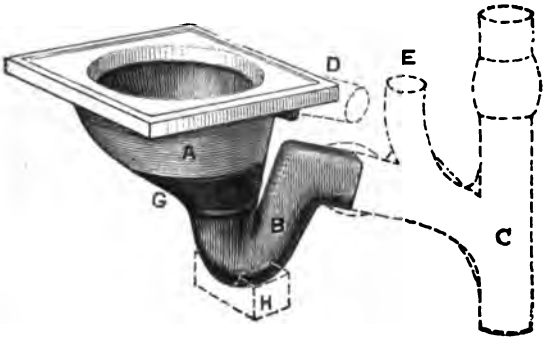
short hopper flushing rimmed basin with anti-trap, and with a white-ware slop top and hinged seat above it.

The water supply can either take the form of a small two or three gallon syphon-action cistern with large flushing pipe, or through a well-regulated bellows regulator valve and flushing pipe.

By this means the apparatus can be made to serve either as a water-closet or slop sink. The following sketch serves to illustrate this arrangement, and represents Messrs. Hellyer's closet basin and trap.



Valve-closets are often made use of for the emptying of slops, but such an apparatus does not form a good slop sink. The overflow-pipe to the basin becomes dirty and sometimes choked up by shreds of cloth, hair, &c.

Moreover, it is a difficult matter to pour slops down a valve-closet without either splashing a good deal or causing the basin to overflow. To prevent this, the handle attached to the valve would have to be raised with one hand while the other poured down the slops —a difficult matter.

The ordinary sink now calls for a little attention—that is to say, the form of sink generally employed in pantries, &c. Such an appliance does not need any special treatment, other than providing proper atmospheric disconnection for the waste-pipe. The usual mode of constructing this class of sink is to form a wooden box with an internal lining of sheet lead. Sheet lead after a time becomes much buckled in consequence of the exposure to hot water, with which it is often filled, and presents a very uneven appearance.

It is a good plan to provide an overflow to a pantry sink, since it is frequently required to fill it, in which case, should the taps be allowed to run for a period longer than necessary, the superfluous water could pass away without causing inconvenience or mess by overflowing on to the floor.

The overflow-pipe can be taken into the trap immediately under the sink on the inlet side, or, if more convenient, directly into the open air. The overflow-pipe should be of a size sufficiently large to carry away water as fast as admitted by the hot and cold supply-pipes together.

White glazed ware is the best material to use for the class of sink in question. The advantage gained by the adoption of lead is that glass and crockery-ware coming in contact with it is less liable to be broken than in the former case with a harder material. Enamelled iron is sometimes used, but it is liable to become scaly, due to the cracking and falling away of the enamel.

White glazed tiles fixed on the wall around a sink give a very clean and tidy appearance to it, more especially in the case of a scullery.

COMPULSORY NOTIFICATION OF INFECTIOUS DISEASES.

THE local authorities of the districts included in the subjoined list have adopted the Infectious Disease (Notification) Act, 1889, during the past month. The system of compulsory notification now applies to three-fourths of the population of England and Wales; being in force in London, in 458 urban, 320 rural, and 17 port sanitary districts, and (under separate local Acts) in 56 large towns. The aggregate population of these districts is upwards of 19,000,000.

Name of Authority.	Population (1881).	Date on which Act comes into force.
Urban Authorities:—		
Aston Manor	53,842	July 1, 1890.
Atherton	12,602	May 1, 1890.
Bridport	6,795	,,
Brighouse	7,965	,,
Burslem	26,522	,,
Frome	9,377	March 1, 1890.
Gravesend	23,302	Feb. 17, 1890.
Heaton Norris	5,797	
Maryport	8,126	April 1, 1890.
Neston and Parkgate ...	3,405	May 1, 1890.
New Romney	1,026	April 1, 1890.
Oakworth	5,762	Feb. 1, 1890.
Pemberton	13,762	,,
Penarth	6,228	May 1, 1890.
Rishworth	1,110	April 9, 1890.
Ryde	11,461	March 1, 1890.
Sandal Magna	4,264	May 1, 1890.
Seaton (Devon) ...	1,221	
Sutton (Surrey) ...	10,329	
Tunstall	14,244	May 1, 1890.
Walsall	58,795	March 1, 1890.
Ynyscynhaiarn ...	5,506	April 1, 1890.
Rural Authorities:—		
Bridgend & Cowbridge	20,412	March 1, 1890.
Downham	16,771	March 17, 1890.
Horsham	15,426	April 2, 1890.
Reeth	4,717	
Ripon	9,057	April 1, 1890.
Shipston-on-Stour ...	17,874	Feb. 1, 1890.
Smallburgh	14,848	May 1, 1890.
Stoke-upon-Trent ...	4,241	March 25, 1890.
Weobley	8,179	Feb. 1, 1890.
Total ...	402,466	
Population of Districts given in previous numbers	11,208,775	
Grand total ...	11,611,241	

AT Huntsmoor Park, Iver, near West Drayton, Messrs. C. Isler and Co., of London, have recently completed an artesian-bored tube well, 200 ft. deep, in just over four weeks, after passing through the various beds of clay and sand which form part of the London basin. As soon as the chalk was reached the water rose 14 ft. above the surface, and at 5 ft. the overflow was at the rate of 200,000 gallons per hour through a 4-in. bore. The water is very pure.

A DISCOVERY has been made at Northampton which is causing much uneasiness to the householders. It appears that in pumping water from a place called Lumber Tubs, without its being filtered, germs of batrachia were deposited in the reservoir of the corporation waterworks. These have developed to an alarming degree, so much so that on examining some choked service-pipes recently they were found to be blocked with live and dead frogs. Every means are now being taken to rid the water of the objectionable matter.

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THE
SANITARY RECORD.

The Organ of the Association of Public Sanitary Inspectors of Great Britain, and of the National Association of Sanitary Inspectors.

APRIL 15, 1890.

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The Editor will be glad to receive, for publication announcements of meetings, reports of proceedings, and abstracts or originals of papers read at meetings of Medical Societies of Health, Public Analysts, and Sanitary Inspectors' Associations, &c.

Medical Officers of Health, Public Analysts, Town Clerks Local Board Clerks, Sanitary Surveyors, and Inspectors, are requested to send Notices of Appointments and Vacancies to the Editor, care of Messrs. W. H. ALLEN & Co., 13 *Waterloo Place. S.W.*

Should any of our readers require information relative to the taking out of patents for inventions, either English or foreign, the "Patent Correspondent" of the SANITARY RECORD *will be pleased to give them the benefit of his experience and assistance. Communications to be addressed,* Patent Correspondent, SANITARY RECORD Office, 13 Waterloo Place. S.W.

In this number of the SANITARY RECORD *appears the first of a series of articles on "Notable Sanitary Engineers," which will be continued from time to time as space permits. The present article is accompanied by a portrait of Sir Henry Doulton, enlarged by the Callotype process from a photograph by Messrs. Fox & Maull.*

THE SANITARY RECORD will in future be published by Messrs. W. H. ALLEN & Co., 13 Waterloo Place. S.W. All matters relating to the literary portion of the Journal, and all exchange journals, periodicals, books for review, and new inventions, should be addressed to the EDITOR at above address. All business communications relating to Advertisements, Subscriptions, &c., to be addressed to the MANAGER at the same address.

SCOTCH COUNTY COUNCILS AND PUBLIC HEALTH.

THE position of medical officers of health has always been in Scotland an anomalous one, except in one or two of the larger towns. It is to be hoped that the newly-constituted county councils will, by virtue of the powers conferred on them by the Local Government Act, remedy this, and appoint as medical officers men who have devoted special attention to the subject of hygiene, and who should not be engaged in private practice.

Recently a most able, clear, and comprehensive article appeared in the *Glasgow Herald* on this subject, but we are sorry to see that it gave rise to correspondence as unnecessary as it was injudicious.

The county councils are themselves quite in the dark as to how the appointment of medical officers and sanitary inspectors will be made, whether for whole counties, for districts, or for combinations of counties, and it is certainly unfortunate that at this juncture the old standing question of the relation of the sanitary inspector to the medical officer of health should be forced into the foreground. It is, however, satisfactory to see that the prevailing opinion is that the medical officer of health should not be engaged in private practice, and with this we quite agree, as (and more especially in rural districts in Scotland, where sanitation is as far back as it was 50 years ago) no strong measures for remedying sanitary defects can be so easily taken unless such is the case.

Of much more importance for the consideration of the county councils is the circular issued by Mr. Dundas, of Arniston, the convener of the Midlothian County Council, regarding the appointment of medical officers of health.

He makes two suggestions regarding these appointments, the first being that all Scotland should be divided into 6 districts, and a medical officer of health appointed for each, while the second, and to our mind the more important, suggestion is that 16 district or combination of counties should be made, the medical officer of health of these also acting as medical officer for the district committees.

We do not agree with Mr. Dundas as to the financial difficulties. Scotch people are shrewd enough to get good value for their money, and in an untried post like this it might be expected that some such opinion as this would be expressed; but if the proper men are appointed, men who are specialists in sanitary science, there is little reason to fear that the salaries will be grudged by the general body of electors.

Mr. Dundas rightly regrets that the smaller burghs are excluded from the control of the county authorities for public health purposes, but we hope that through time these burghs will come to see that by uniting with the county authorities, and appointing as their medical officer the county medical officer, their sanitary organization will be put on a firmer and more efficient basis.

One point in which Mr. Dundas's paper needs revision is as regards the population of the areas described by him. Take, for example, Lanarkshire, the wealthiest and most important county in Scotland. Mr. Dundas puts down the population of the county under the control of the county council at 220,000. In 1881, from census returns, it was 257,000, and part of the county—notably the Barony parish, Glasgow, Bothwell, Blantyre, and Hamilton parishes—have increased to an enormous extent, so that the population may be roughly stated as over 300,000.

If the Glasgow Boundaries Bill passes, then a large part of the Barony parish will be included, and even then the population will be greater than that given by Mr. Dundas.

There can be no doubt that on the grounds of economy and sanitary efficiency the appointment of one medical officer for the county, with, in some of the more densely-populated areas, a district medical officer, would be the best solution of the difficulty. We are sorry, however, to learn that this is not to be the case, but that several appointments are to be made.

It is interesting to note the salaries at present given in this populous county to medical officers and sanitary inspectors. To the former the munificent sum of £169 3s. is paid, while the salaries of the latter are £749 7s. 6d. The number of medical officers is 26, and the number of sanitary inspectors 38; an average salary in the one case of £6 10s., and in the other of £19 15s.!

It need hardly be said that the sanitary condition

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of the county is at as low a level as the salaries of the medical officers and sanitary inspectors.

Mr. Dundas states that "no adequate advantage will accrue to the county from the large expenditure which is being forced upon the local authorities."

In view of the above, most sanitarians would say that increased expenditure was an absolute necessity.

THE HOUSING OF THE WORKING CLASSES.

The London County Council are proceeding on very different lines to those adopted by the Metropolitan Board of Works in the matter of the housing of the working classes. Before taking any hasty steps they are making very careful investigations and inquiries, though, of course, they are proceeding with the artisans' improvement schemes left uncompleted by the late Metropolitan Board of Works. The latter body restricted itself entirely to the Acts known as Cross's Acts, and took no means to gauge the powers given to it by the Acts known as Torrens' Acts, and, moreover, wholly ignored the enabling powers of Lord Shaftesbury's Act, conferred upon it by the Housing of the Working Classes Act, 1885, so that the work the Council have taken up is comparatively new. The Board of Works, it is true, cleared away many insanitary areas at great cost to the ratepayers, but they took no steps to re-house those displaced until long after the displacement. The chief inquiry which the Council have so far been proceeding with is as to common lodging-houses, and this is naturally intimately connected with the general housing question.

The Council have drawn up a draft report divided into two sections, one dealing with the maintenance in a satisfactory and sanitary condition of the existing accommodation for the working classes; the other, with the provision of further and better accommodation of the working classes in the metropolis. As the report very truly states, that on however large a scale fresh accommodation for the working classes may be made, whether undertaken by philanthropists, or municipal authorities, or commercial companies, or by all combined, it will only relieve to a very limited extent the present unsatisfactory condition of things.

In regard to the first section, the Legislature has, in unequivocal terms, declared that where houses are in a state unfit for human habitation, the local authority shall step in to rectify the state of affairs; but it appears that the law under Torrens' Acts is practically ineffectual for the purpose of clearing out slums or of remedying the work of the jerry builders, in the hands of the present local authorities, who, instead of resorting to the proper practical remedy of demolishing the building, rest content with so-called "improvements," which are of no lasting good. The Council are endeavouring to get the local authorities put in motion, and, moreover, to get the Acts amended and consolidated. In order to show how the Acts may be evaded is apparent from a recent case which was brought before the London County Council in regard to the Hammersmith Vestry. The Vestry had a group of houses reported to it by its medical officer as coming within Torrens' Act and needing removal; whereupon the Vestry instructed its surveyor to report and adopted his report, which was at variance with that of the medical officer. This was no doubt done to suit the pockets of the owners, two of whom were vestrymen. The Council wish to see Torrens' Acts so enlarged that they themselves can enforce its provisions in large as well as small areas. At present, for large areas, the Council have to resort to Cross's Acts, and an operation under these Acts means Provisional Order and Act of Parliament, which causes serious delay and expense.

There is great laxity on the part of local authorities in undertaking, through their sanitary officers, proper and regular inspection, although under the Sanitary Acts and Nuisances Removal Acts they have power to take summary proceedings before a magistrate for the closing of houses unfit for human habitation and for the abatement of over-crowding. Again, the local authorities have specific power, in the case of all houses let in lodgings or occupied by members of more than one family, to enforce regulations by penalties for their registration and inspection, in order to secure cleanliness and decency. Although in 1885 Parliament declared it should be the duty of the local authorities to enforce the Acts whenever occasion arises, it did not compel them to do so. Last December Mr. Ritchie reminded the local authorities of their power to prevent any premises which are unfit for human habitation being inhabited, to prevent over-crowding, and to secure the demolition or improvement of insanitary dwellings.

The Council's report shows how unequally sanitary inspectors are distributed over the metropolis. There are 111 actual inspectors of nuisances, of which 8 are at Islington, 4 only at St. Pancras, and but one at Newington, with a population of 108,000. How can the work of inspection be expected to be carried out properly at Newington?

The second section of the Council's draft report as to the provision of further and better accommodation for the working classes, has been sub-divided into the following headings:—(1.) The re-housing of persons displaced by clearances or improvements. (2.) The further provision of accommodation to meet the increase of the population, apart from displacements. (3.) The provision, as Sir Edward Guinness says, of "clean, healthy homes for people poorer than those who at present avail themselves of the existing artisans' dwellings," *i.e.* the better housing of the poorest classes, including those occupying common lodging-houses, and furnished and unfurnished tenements of the humblest description.

As to the re-housing of persons displaced by clearances or improvements, the Council intend to see that all persons actually displaced are housed elsewhere, even if the accommodation should be of only a temporary character. Where facilities offer they will re-build gradually so as to re-house while displacing, and render temporarily habitable the part which awaits demolition. There are now in the possession of the Council several vacant building areas acquired by the late Board under Cross's Acts. Some of these sites have been vacant for years, such as Trafalgar Road, Greenwich; Hughes Fields, Deptford; Brook Street, Limehouse; whilst those in Shelton Street, Drury Lane, and Cable Street, Shadwell, are more recent acquisitions.

The provision of fresh accommodation for the working classes, apart from what is necessitated by displacement, is still receiving the attention of the Council, and no definite conclusion has been come to as to whether the Council itself should undertake some large scheme for building on new areas, in order to draw away the working classes from the

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congested districts. The Council wish their architect and medical officer to obtain information as to the present amount of accommodation available for the working classes in the various districts of the metropolis, the number and character of recently erected houses, and the apparent need for further accommodation. It is found that the nominal rents of two and even one room tenements in very many of the model dwellings erected in the metropolis are beyond the reach of many persons, and also that the absence of enforcement of regulations against overcrowding, by rendering sub-letting possible, maintains at the same level the rents charged for accommodation of a standard inferior to much of that provided in block dwellings.

The people here referred to have so far lain altogether outside the operations of private enterprise. Sir Edward Guinness's trustees intend to experiment on buildings for this section of the population.

The common lodging-house accommodation in London does not compare favourably with that elsewhere, and the Council is endeavouring to obtain information as the methods pursued in this regard on the Continent. Answers have been received on this branch of the subject from the town clerks of various cities and boroughs of the United Kingdom, and from these it appears, so far, that Glasgow only has taken the matter in hand. Seven model lodging-houses in various industrial centres have been erected in Glasgow, six for males and one for females. Each house is provided with a reading-room as well as a dining-room or kitchen, besides bath and washing arrangements. The beds are so arranged that each is in a separate cubicle or compartment.

From the foregoing it will be seen that the Council is taking every care in order to come to sound and satisfactory conclusions as to the best mode of housing the poor of London, and any delay in the matter will readily be conceded, provided a better state of affairs is the outcome of its deliberations.

THE LONDON COUNCIL AND THE WATER COMPANIES.

THE timely resolution presented to the London Council at the weekly meeting, February 11, 1890, as to the water companies' charges, has met with the success it deserved. The resolution ran as follows:—"That in view of the quinquennial reassessment of property in London, which will come into force in 1891, and the resulting effect which will give the water companies power to exact an increased charge for their supply, this council instructs its Special Water Committee to immediately take the question into consideration, and report thereon." The committee have given the subject careful consideration, and in their inquiries have brought to light some instructive facts. For instance, the rateable values of property in London for the years 1879 to 1890 were as follows:—

	£
1879 . . .	24,501,410
1880 . . .	25,117,605
1881* . . .	27,386,086
1882 . . .	27,883,078
1883 . . .	27,883,078
1884 . . .	28,415,764
1885 . . .	28,920,537
1886* . . .	30,458,611
1887 . . .	30,458,005
1888 . . .	30,758,796
1889 . . .	31,387,848
1890 . . .	31,450,002

From these figures it will be seen that, excluding the years of the quinquennial valuations, the average increase in rateable value has been between £300,000 and £350,000 a year, whilst the increase in the quinquennial years, 1881 and 1886, was 2½ millions and 1½ millions respectively. Assuming that the increase in ordinary years is from new property only, and deducting the average amount of such increase from the increase in the quinquennial years, the result arrived at is that at each quinquennial valuation the increase in the rateable value of old property averages about 1½ millions. If the average authorized charge of the several companies for domestic supply is 5 per cent. on the rateable value, the increase of income to the companies at each quinquennial revaluation would amount to £75,000 a year, solely in respect of the increased value of existing property. The consequent increase in the value of the water companies' stock would therefore exceed 2 millions. This mode of payment on assessment is the worst system there could be, and it is to prevent London being saddled with this prospective increase at each quinquennial valuation that Mr. James Beal, the chairman of the Special Water Committee, has proposed, at the meeting of the council, Tuesday, April 1, the introduction into Parliament during the present session of a Bill for suspending the powers of the water companies to increase their charges for water consequent upon any increase that may be made in the assessment of property in the county of London by the quinquennial valuations. It is clearly the duty of the Government to protect the interests of the consumers by supporting the demands now made. The proposal is simply to stay the infliction of a terrible fine imposed upon London. Why should not water be charged like other commodities, according to its value, or else by meter, as in the case of gas?

Parliament will be petitioned on its re-assembling after the Easter recess by the London vestries and district boards to endeavour to get a Parliamentary Commission on the subject of the metropolitan water supply, with ample powers to fix the terms upon which the Council may acquire the several undertakings of the metropolitan water companies, and so finally dispose of a question which has been pressing for settlement for nearly 50 years.

THE ABBEY MILLS PUMPING STATION.

DURING the time that the late Mr. Gordon acted as engineer to the London County Council, he drew up an important preliminary report on the condition of the Abbey Mills Pumping Station, which has not so far seen daylight. In this report we learn that in spite of the heavy expenditure upon engines and pumps at this station to deal with the sewage, the low-level sewer has not been cleared for many years back. A printed instruction in the engine-house, dated as far back as 1870, sets forth that when the sewage rises to 9 feet above the suction well as indicated by the float dial, another engine is to be started, the

* Years of quinquennial valuation.

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evident intention being that as many engines as were necessary should be started to keep it at that level. The average quantity of sewage pumped from January to August in last year was 94 million gallons per day, inclusive of rainfall. The number of hours worked by the engines during that period was 25,878 out of a possible total of 46,476 hours, had all the engines been at work during the whole of that time. The working hours made by the engines was about 56 per cent. of the possible number without making any allowance for stoppages for cleaning, repairs, &c. The quantity of sewage delivered at Barking by the three outfall culverts is estimated at 90 million gallons per day, and this not only includes the low-level but also the high and middle-level sewers. It was therefore evident that a thorough investigation, in order to reconcile the quantity believed to be dealt with at Abbey Mills with that carried by the outfall sewers, was necessary, and Mr. Gordon endeavoured to thresh the matter out. When it is borne in mind that the population draining into the low-level sewer is probably not more than 1,350,000, and which taken at 5 cubic feet per head for sewage would only give about 42 million gallons as against 90 millions said to be pumped. Mr. Gordon came to the conclusion that the present pumping power requires supplementing with further pumping machinery if reasonable provision is to be made for rainfall beyond and in addition to the maximum dry weather sewage flow; that in order to effect a much-desired saving in the consumption of coal, it is desirable to improve and alter the existing engines by compounding them. This, of course, would mean new boilers, and such as would work at higher pressure. It appears to be necessary to have further water-heating apparatus or so-called economisers as a further means of saving coal. The quantity of coal required for the whole of the eight engines to keep the water down in the sewer is very considerable, so that to keep the sewage in the low-level sewer down to a normal level even in dry weather the coal consumption would necessarily be greatly increased over the consumption of past years in proportion to the number of engines found requisite to do the work properly.

Sir Joseph Bazalgette placed the power of these pumping arrangements at 15,000 cubic feet per minute, or 135 million gallons per day. This was the maximum quantity of sewage and rainfall evidently intended to be provided for.

In spite of the vast sums of money which have been spent on this pumping station, a great deal more has yet to be disbursed, and then probably with little avail in overcoming the question of dealing with the sewage of London. Moreover, the facts set forth in this report are of vital interest to Londoners from a health point of view and in relation to the ever-increasing rate of population.

PUBLIC BUSYBODIES.

THE County Council of Cornwall appear to be ambitious to meddle with matters with which they are not concerned. They have, it seems, appointed a committee to inquire into the large question of leasehold tenure of land, presumably with a view to its alteration. It is well known that considerable differences of opinion exist as to the merits of the various leasehold tenures which are known in Great Britain and Ireland, and various drastic changes have been proposed within recent years. None of these proposals have, however, taken any practical shape, and the question is hardly ripe for legislation. Under such circumstances, it certainly seems a work of supererogation for a county council to institute an inquiry of its own. The council cannot legislate, and can hardly make any recommendation which is likely to have much weight with Parliament. The council's inquiry, as far as it has gone, seems likely to be productive of no practical good. The landowners, knowing that the council has no power to interfere, naturally decline to gratify the self-importance of the committee by appearing before it; and the so-called evidence which has been given consists merely of the utterances of tenants, or of those who pretend to speak in their names, and say that the contracts they have made are unsatisfactory. One witness complained that his landlord exacted a higher rent than had been agreed on, a matter which a court of law would soon rectify if the complaint were well-founded; and another complained that at the expiration of his lease, buildings which he had erected, with full knowledge of his position, had become the property of his landlord. This is nothing new, nor is it of any value. It was also stated that building operations were carried on much more freely in districts where freehold sites were obtainable than in the immediate neighbourhood where only short leases were granted. This seems very probable, but it does not make out a case for the interference of the county council. That body has limited powers, and is only authorized to spend the ratepayers' money for certain definite objects. We presume that the meetings of the committee, which has been perambulating the county, are attended with some expense. If it should be proposed to charge this expense on the county fund, some ratepayer may well object, and compel the auditor to disallow it, and surcharge the amount on the members of the committee who have amused themselves by prying into their neighbours' affairs. There may be precedents for similar useless inquiries by corporations of municipal boroughs, who select their own auditors; but there certainly are precedents also for the disallowance of such expenditure, when audits have been properly conducted. There have in the past been complaints that local authorities have shown an inclination to neglect their proper work and attend to matters not relegated to them. Some county councils show a similar tendency, and a lesson appealing to the pockets of their members might be salutary.

TYPHOID FEVER AT JOHANNESBURG.

IN view of the very serious reports of the prevalence of typhoid fever at Johannesburg, the following extracts from the *Star of Johannesburg* and the *South African Reporter* will be interesting to many of our readers, whilst they show clearly the inevitable results of the violation of sanitary laws.

There can be no question, so we are informed upon excellent authority, that typhoid fever is more prevalent in camp at the present time than it has been at any period since Johannesburg was founded, and the mortality exceeds by far the average of 12 per cent., which is the accepted rate in England and other European countries. This disease is so directly attributable to neglect of sanitary laws and precaution that too much attention cannot well be called to its presence in our midst. Overcrowding there undoubtedly is in Johannesburg, even in

cases for which there is no manner of excuse, but poverty there is not—at all events, not in so extreme a form as to produce that malignant and much-dreaded type of disease. In the majority of cases the existence of insanitary conditions can be made out.

It is on all hands allowed that the most certain means of preventing the approach or spread of the disorder are those which provide efficient drainage, a safe method of sewage-disposal, and an abundant supply of pure water. It is not in one, but in the whole, of these essentials of public health that Johannesburg is lacking. There is practically no drainage save that which the natural conditions of the township provide; the proper disposal of waste products is a task fulfilled in the most perfunctory manner; and the supply of water—well, enough has been said upon that matter of late, and we shall spare our readers the infliction of still further harping upon that one familiar string.

The special iniquity with which we propose to deal on this occasion is the surprising action of the sanitary board in creating a worse nuisance than any which they can honestly claim to have removed. The selection of a spot to windward of the town, high above the level of the camp, and adjacent to the main western road, as the site for the deposit of Mr. Withycombe's treasures (*sic*) was an act of madness, and it is not too much to say that in all human probability this selection has led to the loss of dozens of lives during the past two months, as it will certainly lead to the loss of many others unless the error should be speedily repaired. With no cloacine system, and without the possibility of one being adopted for many years to come, there is but one safe and tolerable means for the performance of this most necessary service. The contents of the vans must be sent to leeward, and far away from camp; the farther away the better, and, at all events, far enough to prevent either the dissemination of typhoid or the defiling of the streams and the subsoil in the neighbourhood of the town. It is fortunate that the service can be in this manner performed, now that the Boksburg Tramway is practically completed, without such ruinous expense almost to justify the adoption of some cheaper expedient; and we are glad to learn that arrangements are already considerably advanced which hold out a prospect that the line will be so utilized at a very early date.

Some idea of the prevalence of sickness in Johannesburg is forthcoming in the fact that the interments at the cemetery during the week ending Feb. 1 numbered 42, 8 deaths having resulted from typhoid. These returns include the native interments, but these seldom exceed 12 or 15. If things go on at this rate, there will soon be no population left for typhoid to kill. Forty-two deaths in one week out of a population of 30,000 discloses a frightful state of affairs, viz. a rate of 73 per 1,000 per annum, which is higher than the old Indian maximum of 69 per 1,000 per annum.

Mr. Richard Cadbury, the well-known cocoa manufacturer, has presented to Birmingham the sum of £30,000 for the purchase and endowment of a sanatorium for women and children.

Mr. William Davidson, engineer of the Melbourne (Victoria) Water Supply Department, has been appointed to succeed the late Mr. W. H. Steele, as Inspector-General of Public Works, at a salary of £1,000.

Speaking at Peterborough in support of the Society for the Prevention of Cruelty to Children, the Bishop of the diocese said he hoped the society would impress on the Legislature that painful cruelty was practised through the present system of child insurance. He had been horrified recently to hear from medical men the extent and form of this child murder, for it was nothing else. He thought the person who, in a fit of passion, suddenly and swiftly terminated a child's life was innocent compared with one who let it waste away day by day until its miserable life was ended.

NOTES OF THE MONTH.

THE GUINNESS TRUST.

Lord Cadogan has given to the Guinness Trust a plot of freehold land, upwards of an acre in extent, in a central part of his estate in Chelsea, valued at £40,000, as a site for the erection of dwellings for the poorer classes in that district. The site in question forms part of the garden of Blackland's House, Marlborough Road, and has never been built upon. In order to render it immediately available, Lord Cadogan has purchased from the lessee the unexpired term of his lease, which has still 14 years to run. The Guinness trustees have instructed Mr. M. E. Macartney, of 52, Berkeley Square, to prepare plans for the erection of dwellings on the site presented to them by Lord Cadogan. The trustees have also acquired by purchase sites in Columbia Road, Bethnal Green, and Brandon Street, Walworth, and have instructed Mr. F. T. Pilkington, of 24, Russell Square, and Messrs. Joseph & Smithem, of 45, Finsbury Pavement, to prepare plans for these sites.

SANITARY STATE OF SCHOOLS IN GREENOCK.

The need for periodical inspection of schools, both private and public, is well exemplified by the results of a recent visitation to the schools in Greenock by Mr. James Devine, the local sanitary inspector. The number inspected was 19, 7 being public, 4 denominational, and 8 private schools. Of the public and denominational schools, sanitary defects of a more or less objectional nature were found in 9, and also in 1 of the private schools. "In one case the water-closets for the infants and girls were found to be very objectionable in point of situation, inasmuch as they were within the building—those for the former entering off the lobby adjoining the class-room door, and those for the latter entering off the staircase; in one, the water-closet for the male teachers was unfit for use from damp, decayed woodwork, &c., the floor of the convenience for the girls was below the level of the court surface, rendering the place filthy in wet weather, there were holes or depressions in the court, the urinal was foul and offensive, and the ashpit without ventilation: in one, there were holes or depressions at the entrance to the conveniences, and there was the want of adequate surface drainage: in another, there was a depression in the floor at entrance to one of the water-closets; in another, the urinal was most foul and offensive from the want of regular flushing: in yet another (that of an old building), the conveniences were found to be immediately under a class-room, they were badly lighted, the ceilings unplastered, the floors and ground adjoining (forming the whole area under the room) were so badly paved that the subsoil was charged with impurities, and gave off a very offensive odour, which, there can be no doubt, would contaminate the atmosphere in the class-room: in one, the water-closet for the girls was in the corner of a small class-room and close to the fireplace: in another, where there were over 300 children in attendance, the conveniences were on the dry closet principle, and of the very worst description—the erections for the boys and girls were situated back to back, with a space between for the reception of the excreta, and the smells arising from this receptacle, owing to the absence of deodorising

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material, were simply disgusting: in one the conveniences were without adequate water supply, and otherwise defective; and in another, the ashpit and an outhouse were not in proper sanitary order." Mr. Devine also calls attention to the defective condition of the urinal accommodation in connection with the majority of the public schools, in consequence of the conveniences not being so fitted as to admit of a continuous flow of water in them during school hours. There were only 3 or 4 of these schools where the conveniences were found to have the appliances for water, and in 1 case only was water actually flowing at the time of visit. "It is needless to say that in that case the place was entirely free from offensive smell." There is much reason to fear that if equally minute examinations were made of the school premises in many other large towns, similar defective sanitary arrangements would in too many cases be disclosed.

A SEWAGE DIFFICULTY.

THE tenant of the Waltham Abbey Sewage Farm has written a letter to the local board calling attention to the fact that the sewage farm is quite inadequate for the purpose of receiving the sewage of the town, which gradually increases. The ground is water-logged, and Mr. Carter, before making any complaint to the board, hired land adjoining the farm, and turned the sewage on to it, but, owing to the low-lying position of the ground, and its heavy loam quality, the sewage could not be disposed of. Mr. Carter asks the board to pay him a small amount as compensation, for the whole of his market garden produce had, he states, "been destroyed." On a previous occasion we had referred to the sewage farm at Waltham Abbey, which, by the way, is situated within a short distance of the River Lea. The local board all along has denied the pollution of the river, but where then does the effluent, and undoubtedly the sewage go to now that the lessee of the farm tells the board that it "is quite inadequate" for the disposal of the sewage. All land in the vicinity of the farm is quite unfitted for the disposal of the town sewage by means of irrigation, and a growing part of the board's district must within a short time be connected with the drainage system. When the whole question comes to be discussed, the difficulties that will present themselves will be of the greatest interest to all sanitary engineers.

"NOT FIT FOR A DOG TO LIVE IN."

SUCH is the description given by Mr. C. C. Lewis, one of the Essex coroners, of an apology for a dwelling house at High Laver, in which a labourer's wife died last week. The coroner's condemnation is not a whit too severe, according to the report given at the inquest and the impression produced upon the minds of the jury. The dwelling is stated to be in such a dilapidated condition that when the wind was high the husband found it impossible to take a lighted candle upstairs, and when there was much rain the bedstead had to be removed from one part of the bed-room to another, in order to escape the water which drips through the rotten roof. It is small matter for wonder if the woman's death has been accelerated by the effects of cold during the past inclement weather. The wonder is that the whole family have not disappeared. The Ongar Rural Sanitary Authority will doubtless see to the subject now that an untimely death of a woman has emphasized the need of attention which ought to have been paid before. This is not merely a question of landlord and tenant. It is a matter of public health, with the charge of which the authority are entrusted by the ratepayers of the district, and if the house be not "fit for a dog to live in" surely human beings ought not to be allowed to die in it.

WHY NEGLECT WHOOPING-COUGH?

STATISTICS for February last show that whooping-cough was the most fatal zymotic disease in the twenty-eight large English towns dealt with by the Registrar-General in his weekly returns. "The rate of mortality from this disease, which had increased from 0·28 to 0·84 per 1,000 in the four preceding months, further rose to 0·93 during February, but only slightly exceeded the average rate in the corresponding periods of the eight preceding years, 1882-89." From these figures, therefore, it is evident that a large number of deaths must be due to this cause, a fact which does not seem to be fully grasped by the public at large. Whooping-cough is too often regarded in the light of a trifling and unavoidable malady, and it rarely happens that the slightest precaution is taken against its spread by infection. Some amount of blame, moreover, attaches to medical men, who, in many cases, fail to insist upon the necessity of isolation and disinfection. Yet the live contagion of whooping-cough is not less active, distinct, and subtle than that of scarlet fever or of small-pox. Then there is another aspect of the question, which it is just as important to keep in view. As in many other affections, although the number of deaths as the immediate result of the disease itself is great, yet it may be doubted if the remote mortality is not much greater. The strain on the delicate lung tissues leads to emphysema and other grave complications that often prove fatal after the lapse of many years. Meanwhile let parents be taught to regard this scourge in a truer light.

THE SAFETY OF THEATRES.

THE question of the safety of our theatres in case of fire crops up now and then, but after a seven days' wonder the matter drops, and things go on as before. It almost seems as if nothing short of some such terrible tragedy as the Continent has witnessed on several occasions will force decisive and radical action upon the authorities. The incident at Exeter was, perhaps, on too small a scale, and at too great a distance from the metropolis, to bring about any very lasting effect. At present, what with insufficient approaches, blocked gangways and stairs, and the fast-closing of additional exits, many of our London theatres approach the condition of organized death-traps. The County Council seems to be too much occupied in looking after the morals of public audiences to find time to attend to their bodily welfare. In Liverpool, however, one is glad to hear that the authorities are bestirring themselves, and seeing that the safety of the people is properly provided for at the various places of amusement. A short while back the proprietor of the Shakespeare Theatre was summoned before the magistrates on the charge of not keeping his gallery stairs clear, and of fastening doors while the audience was in the building. The defence was that these breaches of rules were committed by a servant, who had since

been dismissed. Lessees, however, must learn that they cannot shirk responsibility in this way. The excuse would be a poor one, if by such neglect a few scores of lives were sacrificed, as might easily happen at any moment. Unexpected and thorough inspection by officials, *sans peur et sans reproche*, is what we want.

THE INFLUENZA EPIDEMIC.

An interesting report on the recent influenza epidemic has been issued by Dr. John F. J. Sykes, the Medical Officer of Health for St. Pancras. It appears that the prevalence of the disease was first noted in Siberia at the beginning of October last; at the end of that month it was prevalent in St. Petersburg, in November in Vienna, then in Paris, and its general prevalence in London was noticed about the end of the year. With regard to the association of influenza with "dengue," which latter disease is said to be confined to certain latitudes, the points of difference between the two diseases are set out by Dr. Sykes. Dengue is said to have been prevalent in Smyrna and Constantinople at the end of October last, or at about the same time as influenza made its appearance in Europe. With the object of collecting statistics as to the spread of the disease in St. Pancras, Dr. Sykes obtained information from 73 medical practitioners relating to about 8,000 cases. These are carefully classified in his report; and from them it appear that the disease was first observed in the third week of October and reached its maximum about Christmas, and that about the third week in January it began to decline. There was a balance of opinion as to whether the disease was infectious or contagious, although the manner in which the disease spread through families pointed to infection. The male adults are stated to have been most numerously attacked, while children were remarkably free from the disease; this is probably due, to some extent, to the fact that male adults, on account of their daily occupations, are more likely to meet with others suffering from the disease. From further investigations made by Dr. Sykes, he found that nearly a thousand horses were known to have suffered from the disease between the middle of September and the end of January, although he considers this number is much under the mark. Dr. Sykes calls attention to the fact that no single instance could be found in which the disease had been communicated from horse to man, and the evidence was directly against such communication; for while there were many persons living over stables wherein horses were suffering, neither these persons nor the stablemen attending the horses contracted the disease; and men attending healthy horses in adjoining stables were affected with the prevailing complaint.

SCHOOL ATTENDANCE IN WINTER.

How even the most beneficent and well-regulated institutions may become sources of danger to the recipients of their benefits is illustrated by Dr. Edward Crossman, in his report to the Barton Regis Rural Sanitary Authority for the year 1889. "It is impossible," remarks Dr. Crossman, "during many inclement days in winter to meet children going to school without thinking of the cruelty and danger inflicted on the little things by compulsory attendance at school. Badly shod, half-clad, without protection against cold or rain, they reach school shivering or wet through, and in this condition remain for three hours in the morning or two hours in the afternoon. The wonder is that they survive it. Their parents fear the attendance officer more than they fear bronchitis or consumption, and send the children on snowy, rainy, bitter mornings, when really they ought to be round the fire at home. Great efforts have been made with the object of preventing cruelty to children, but the philanthropists have missed the elementary cruelty inflicted by compulsory education."

THE DISCONTINUED PARLIAMENTARY GRANTS IN AID.

The interpretation of the Local Government Act, 1888, has given rise to an almost innumerable series of questions; but one of the most widely important which has been raised, seeing that it involved the payment of sums of money amounting in the aggregate to almost a million pounds, was that which was submitted to the Queen's Bench Division of the High Court of Justice by the County Council of the West Riding of Yorkshire, and was decided by the Court on March 28. The County Council contended that under the Local Government Act they were not liable for the payment to local authorities of the contributions, in lieu of the discontinued Parliamentary Grants in aid, for a period prior to April 1, 1889. On the other hand, the Treasury and the Local Government Board held that the County Council were responsible for all such payments which, in the ordinary course of procedure if the Local Government Act had not been passed, would have become payable after March 31, 1889, although they may have actually occurred prior to that date. The Court decided in favour of the Crown, and the decision is certainly so obviously in accord with the intention of Parliament that it is surprising that the question should ever have been seriously submitted to a court of justice. Those public vaccinators who have had to wait for many months, until the settlement of this purely legal question, before receiving the awards under sect. 5 of the Vaccination Act, 1867, which have become payable to them during the past financial year in respect of work performed by them prior to April 1, 1889, have just cause for complaint. The Local Government Board, it is satisfactory to note, lost no time in issuing to the various County Councils within three days from the delivery of the decision of the Court their required certificates for the payment of the awards in question by the respective councils.

MEDICAL OFFICER FOR LANCASHIRE.

The Committee of the Lancashire County Council appointed to select a medical officer for the county, held a meeting on March 31 at Preston, at which it was decided to appoint Dr. Serjeant, medical officer to the Bolton Corporation and President of the North-Western Association of Medical Officers, to the office. The salary is £800 per annum, exclusive of travelling expenses. There was a large number of applicants, of whom six were selected to appear before the Committee. The County Council of Lancashire is to be congratulated on having secured the services of so able and experienced a medical officer as Dr. Serjeant, who has all the qualifications necessary for the discharge of the duties of so important an office.

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MEDICAL OFFICER FOR WORCESTERSHIRE.

THE Sanitary Committee of the Worcestershire County Council met on April 5, at the Guildhall, Worcester, when the five selected candidates for the office of medical officer of health for the county attended. The Committee eventually selected Mr. Alfred Edwin Harris, L.R.C.P., L.R.C.S.Edin., Medical Officer of Health for the borough of Sunderland, as the candidate to be recommended to the County Council for appointment.

BROMPTON CEMETERY.

DR. FARQUHARSON, M.P., will put a question to the House of Commons soon after its re-assembling in reference to the above cemetery, to the effect that considering the great increase of property and population in the neighbourhood of the Brompton Cemetery, whether the Government have decided to close it, as was proposed by the Government in 1884, and to hand it over, as a disused burial-ground, to the London County Council, with due regard to the vested interests of persons interested and the policy of the Mural Interments Act.

THE PUBLIC HEALTH

DURING MARCH 1890.

THE mean temperature during the month of March at the Royal Observatory, Greenwich, was 43°·2; it exceeded by 2°·3 the average March temperature in one hundred years, and was higher than that recorded in the corresponding period of any year since 1884. An excess of temperature prevailed on twenty-two days during the month, while on the remaining nine days it was below the average. The coldest day of the month was the 4th, when the mean was as low as 24°·9, and 15°·6 below the average: the mildest day was the 28th, when the mean was 55°·9, and showed an excess of 12°·5. Rain was measured on fourteen days during the month under notice, to the aggregate amount of 2·0 inches, which was 0·4 of an inch above the average amount in the corresponding period of sixty-one years. During the first three months of the current year, the rainfall has amounted to 5·1 inches, which almost corresponded with the average. The sun was above the horizon during 366·9 hours during March, and 90·8 hours of bright sunshine were recorded at Greenwich; this amount was below the average registered in the corresponding period of the ten preceding years. The wind was easterly during the first few days of the month, after which south-westerly winds generally prevailed.

In the twenty-eight large English towns dealt with by the Registrar-General in his weekly returns, which have an estimated population of nearly nine and three-quarter millions of persons, 23,607 births and 17,389 deaths were registered during the four weeks ending Saturday, 29th March. The annual birth-rate, which had been 32·7 and 31·8 per 1,000 during the two preceding months, further declined to 31·7 during the month under notice, and was considerably below the average rate in the corresponding periods of the eight preceding years, 1882–89. In London the birth-rate last month was 30·5 per 1,000, while it averaged 32·7 in the twenty-seven provincial towns, among which it ranged from 24·2 in Huddersfield, 26·1 in Derby, and 26·2 in Brighton, to 39·2 in Cardiff, 39·5 in Sunderland, and 41·4 in Newcastle-upon-Tyne.

The rate of mortality in the twenty-eight towns, which had been 25·7 and 24·8 per 1,000 in the two preceding months, further declined to 23·3 during the month under notice, but slightly exceeded the average rate in the corresponding periods of the eight preceding years, 1882–89. The lowest death-rate in these towns last month was 18·7 in Birkenhead. The rates in the other towns, ranged in order from the lowest, were as follow:—Nottingham, 19·7; Leicester, 20·0; London, 20·2; Cardiff, 21·2; Derby, 21·5; Brighton, 21·9; Portsmouth, 22·6; Sunderland, 22·7; Norwich, 23·0; Hull, 23·4; Huddersfield, 23·4; Oldham, 23·5; Birmingham, 23·7; Bristol, 24·0; Plymouth, 25·3; Liverpool, 25·4; Salford, 26·2; Leeds, 26·4; Bradford, 26·4; Wolverhampton, 27·4; Newcastle-upon-Tyne, 28·0; Halifax, 28·6; Preston, 28·9; Bolton, 30·9; Sheffield, 32·4; Blackburn, 32·7; and the highest rate during the month, 36·0 in Manchester. While the death-rate in London last month, as above stated, was only 20·2 per 1,000, it averaged 25·9 in the twenty-seven provincial towns, in many of which influenza was still fatally prevalent. The 17,389 deaths from all causes in the twenty-eight towns during the four weeks of March included 1,528 which were referred to the principal zymotic diseases; of these, 617 resulted from whooping-cough, 310 from measles, 219 from scarlet fever, 165 from diphtheria, 131 from diarrhœa, 86 from "fever" (principally enteric), and not one from small-pox. These 1,528 deaths were equal to an annual rate of 2·1 per 1,000, which, with one exception, was below that in the corresponding period of any year on record. The death-rate in London last month from the principal zymotic diseases was equal to 2·2 per 1,000, while in the twenty-seven provincial towns it averaged 1·9, and ranged from 0·2 in Leicester, and 0·4 in Birkenhead and in Huddersfield, to 3·0 in Liverpool, 3·1 in Sheffield, 3·4 in Bolton, and 3·5 in Salford.

Whooping-cough was the most fatal zymotic disease in the twenty-eight towns during the month under notice. The rate of mortality from this disease, which had increased from 0·28 to 0·93 per 1,000 in the five preceding months, declined again to 0·83 during March, and was slightly below the average rate in the corresponding periods of the eight preceding years, 1882–89. In London the death-rate from whooping-cough was as high as 1·06 per 1,000, while in the twenty-seven provincial towns it averaged only 0·64, and was highest in Liverpool, Salford, Bristol, Bolton, and Brighton. The death-rate from measles, which had declined from 0·40 to 0·26 per 1,000 in the three preceding months, rose again to 0·42 during March, but was considerably below the average rate in the corresponding periods of the eight preceding years. In London the rate of mortality from measles was equal to 0·47 per 1,000, while it averaged 0·37 in the twenty-seven provincial towns, among which this disease showed the highest proportional fatality in Norwich, Birmingham, and Liverpool. The rate of mortality from scarlet fever, which had declined from 0·41 to 0·27 per 1,000 in the five previous months, rose again to 0·29 during the month under notice, but was slightly below the average rate in the corresponding periods of recent years. In London the scarlet fever death-rate did not exceed 0·15 per 1,000, while it averaged 0·41 in the twenty-seven provincial towns, and was highest in Sunderland, Preston, and Sheffield. The death-rate from diphtheria, which had been 0·25 per 1,000 in each of the first two months of this year, declined to 0·22 during March, but, with one exception, exceeded the rate recorded in the corresponding period of any of the eight preceding years. In London the death-rate from diphtheria was 0·29 per 1,000, while it averaged only 0·17 in the provincial towns, among which, however, this disease was fatally prevalent in Salford. The rate of mortality from diarrhœa was equal to 0·18 per 1,000, and was slightly below the average in the corresponding months of recent years. The death-rate from "fever" (including typhus, typhoid, and simple and ill-defined forms of fever), which had declined from 0·30 to 0·15 per 1,000 in the five preceding months, further fell to 0·12 during March, a lower rate than in any month on record. In London the rate of mortality from "fever" was only 0·07 per 1,000, while it averaged 0·15 in the twenty-seven provincial towns, among which this disease showed the highest proportional fatality in Sunderland. No death resulted

from small-pox during the month under notice, either in London or any of the twenty-seven provincial towns; 7 small-pox patients were under treatment in the Metropolitan Asylum hospitals at the end of March, all of which had been admitted during the month. These hospitals contained 1,035 scarlet fever patients on the same date, against numbers declining from 1,569 to 1,172 at the end of the four preceding months; the weekly admissions during March averaged 71, against 123, 122, 86, and 72 in the four preceding months.

The rate of infant mortality in the twenty-eight towns, measured by the proportion of deaths under one year of age to registered births, was equal to 154 per 1,000 last month, and corresponded with the average rate in the same period of the eight preceding years. In London the rate of infant mortality was 148 per 1,000, while in the twenty-seven provincial towns it averaged 157, and ranged from 93 in Portsmouth, 106 in Sunderland, and 109 in Plymouth, to 204 in Bolton, 205 in Wolverhampton, and 206 in Halifax.

The death-rate from diseases of the respiratory organs, judged by the metropolitan returns, showed a decline from the rate recorded in the preceding month, and was below the average. The weekly number of deaths referred to these diseases in London averaged 428, and the annual death-rate was equal to 5·0 per 1,000.

The causes of 377 of the 17,389 deaths in the twenty-eight towns during the four weeks of March were not certified, either by registered medical practitioners or by coroners. These uncertified deaths were equal to 2·2 per cent. of the total deaths, which showed a slight decline from the proportion in the preceding month. In London the proportion of uncertified deaths was 1·0 per cent., while it averaged 2·9 in the twenty-seven provincial towns. The causes of all the deaths during the month in Portsmouth, Norwich, and Plymouth were duly certified, and only one was uncertified in Wolverhampton and in Birkenhead; the highest proportions of uncertified deaths were recorded in Birmingham, Sheffield, Liverpool, and Halifax.

Among the population living in the outer ring of suburban districts around London, estimated at upwards of one and a quarter millions of persons, the death-rate from all causes during March was equal to 17·3 per 1,000, and was below the average rate in the corresponding periods of the eight preceding years. During the four weeks ending March 29, 67 fatal cases of whooping-cough, 42 of measles, 33 of diphtheria, 8 of "fever" (principally enteric), 7 of diarrhœa, 6 of scarlet fever, and not one of small-pox, were registered in the outer ring; in all, 163 deaths resulted from these principal zymotic diseases, equal to an annual rate of 1·6 per 1,000, which was considerably below the average in the corresponding periods of recent years. Compared with the preceding month, the fatality of whooping-cough showed a marked decline, while that of measles and diphtheria showed an increase. Of the 67 deaths from whooping-cough, 13 occurred in West Ham, 8 in Willesden, 8 in Croydon, 6 in Stratford, and 5 in Walthamstow registration sub-districts. The 42 fatal cases of measles included 12 in Tottenham and 11 in Croydon sub-districts; and of the 33 deaths from diphtheria, 5 occurred in Leyton, 4 in West Ham, 3 in Tottenham, and 3 in Bromley sub-districts.

From the annual report for 1889, presented to the Bisley Local Board by Dr. Partridge, the medical officer of health, we gather that every effort has been made to prevent the spread of infectious diseases. There was no epidemic during the year, the scarlet fever which existed being of a mild type. The births during the year ending December 31 last, were 159, 91 males, 68 females; and there were 84 deaths (including two in the workhouse) 38 males and 46 females. The estimated population of the district at the end of the year was about 5,312. The birth and death-rates were therefore about 28·5 and 16 per 1,000 inhabitants respectively.

NOTIFICATION OF INFECTIOUS DISEASES

IN 80 URBAN SANITARY DISTRICTS.

The table on pages 496–97 contains uniform statistics relating to sickness and mortality in 80 sanitary districts, including twenty-two of the largest English towns. The population of the towns for which we are enabled to publish complete statistics for the month of March is estimated at upwards of six and a half millions of persons. The annual rate of mortality from all causes in these towns during the month under notice averaged 23·7 per 1,000 of their aggregate population, against 22·8 and 25·6 in the two preceding months. The rates of mortality during March were considerably below the average in Birkenhead, Darlington, Scarborough, Smethwick, Stretford, Todmorden, Wigan, and Willesden; while they showed a marked excess in Blackburn, Bolton, Burnley, Darwen, Keighley, Manchester, Sheffield, Stalybridge, and Whitehaven. The high death-rates in most of these towns were due to the continued prevalence of influenza. The death-rate from the eight infectious diseases dealt with in the table averaged 0·74 per 1,000 during March, against 0·75 and 0·66 in the two preceding months. No deaths from any of these infectious diseases were registered during last month in eighteen of the 80 sanitary districts, whereas the rate of mortality from these diseases considerably exceeded the average in Ashton-under-Lyne, Gillingham, Gorton, Jarrow, Keighley, Salford, Sheffield, Stockton-on-Tees, Sunderland, and Swansea. Scarlet fever showed the highest proportional fatality in Gillingham, Keighley, Sheffield, Sunderland, Swansea, and Wallasey; diphtheria in Edinburgh, Greenock, and Salford; enteric fever in Great Yarmouth, Jarrow, and Stockton-on-Tees; measles in Birmingham, Dover, Edinburgh, Rowley Regis, and Swansea; and whooping-cough in Aberdeen, Bolton, Bristol, Dundee, Edinburgh, Exeter, and West Ham. No fatal case of small-pox was recorded in any of the sanitary districts. With reference to the notified cases of infectious disease in these sanitary districts during March, it appears that the proportion of the population reported to be suffering from one or other of the eight diseases specified in the accompanying table was equal to 4·7 per 1,000, against 5·5 and 5·2 in the first two months of this year. No case of any of these diseases was reported during the month under notice in Smethwick or Todmorden, and only one in Bilston, Llanelly, Macclesfield, Ripon, Stafford, Weymouth, and Whitehaven; and while the proportion was under 1·5 per 1,000 in Bournemouth, Bradford, Cheltenham, Coventry, Heywood, and Rochdale, it ranged upwards in the other districts to 8·6 in Sheffield, 8·9 in Bolton, 9·0 in Rochester, 9·7 in Burton-on-Trent, 11·7 in Great Yarmouth, and 17·5 in Keighley. The very high rate in the last-mentioned district was due to the continued excessive prevalence of scarlet fever, 35 cases having been notified during the month, against 53 during February. Diphtheria was proportionally most prevalent in Chatham, Edinburgh, Keighley, Manchester, Salford, and Sheffield; scarlet fever in Bolton, Burton-on-Trent, Devonport, Gillingham, Keighley, Portsmouth, Rochester, Sheffield, Sunderland, Swansea, and Wallasey; and enteric fever in Burton-on-Trent, Cambridge, Great Yarmouth, Norwich, Salford, and Stockton-on-Tees. Two cases of puerperal fever were notified during March in Birmingham, 2 in Sunderland, and 2 in Wigan; and 5 cases of relapsing fever in Darlington. No case of small-pox was notified in any of the sanitary districts during the month under notice.

Anti-Vaccination.—A return just issued shows that the number of children vaccinated during the past quarter in Leicester was only 23 out of about 1,200 children born. This is the smallest number yet recorded.

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Table showing Sickness and Mortality in 80 Sanitary Districts of England and Scotland during the Month of March 1890.

Sanitary Districts.	Estimated Population middle of 1890.	Small-pox.		Scarlet Fever.		Diphtheria.		Typhus Fever.		Enteric Fever.		Cholera.		Relapsing Fever.		Puerperal Fever.		Totals of Preceding Columns.		Annual Rate per 1,000 Persons Living.		Deaths from other Zymotic Diseases.				Deaths from all causes.	Death-rate from all Causes per 1,000 Persons Living.
		Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Ill-defined Fever.	Measles.	Whooping-cough.	Diarrhœa.		
Aberdeen	123,600	—	—	9	—	5	1	—	—	4	4	—	—	—	—	—	—	18	5	1·7	0·5	—	6	21	3	?	?
Accrington	40,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Alverstoke	18,100	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ashton-under-Lyne	40,488	—	—	5	1	2	1	—	—	1	1	—	—	—	2	—	—	8	5	2·3	1·5	—	—	1	1	102	29·7
Barrow-in-Furness	50,000	—	—	5	—	1	—	—	—	3	1	—	—	—	—	—	—	9	1	2·1	0·2	—	—	3	2	80	18·8
Basford	51,000	—	—	11	—	—	—	—	—	4	1	—	—	—	—	—	—	15	1	3·5	0·2	—	—	2	1	100	23·1
Bilston	23,000	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	0·6	—	—	—	—	—	52	29·5
Birkenhead	105,090	—	—	13	1	—	—	—	—	3	—	—	—	—	—	—	—	16	1	1·8	0·1	—	—	1	—	140	15·7
Birmingham	461,865	—	—	170	18	16	3	—	—	13	6	—	—	—	—	2	—	201	27	5·7	0·8	—	31	13	8	820	23·2
Blackburn	125,081	—	—	28	3	1	—	—	—	6	3	—	—	—	—	—	—	35	6	3·7	0·6	—	3	2	3	310	32·7
Bolton	115,846	—	—	70	4	3	3	—	—	5	1	—	—	—	—	1	—	79	8	8·9	0·9	1	—	19	3	303	34·1
Bournemouth	36,300	—	—	1	—	1	—	—	—	—	—	—	—	—	—	—	—	2	—	0·6	—	—	—	6	—	?	?
Bradford	240,515	—	—	11	—	1	—	—	—	8	1	—	—	—	—	—	—	20	1	1·1	0·1	—	7	4	2	488	26·5
Bristol	232,248	—	—	39	3	3	—	—	—	13	5	—	—	—	—	1	—	56	8	3·1	0·4	—	1	33	5	427	24·0
Burnley	95,000	—	—	30	3	1	1	—	—	7	1	—	—	—	—	1	1	38	6	5·2	0·8	—	—	12	4	235	32·3
Burton-on-Trent	48,473	—	—	27	—	7	—	—	—	6	—	—	—	—	—	—	—	40	—	9·7	—	—	—	—	1	79	19·2
Bury	61,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cambridge	41,070	—	—	2	2	2	—	—	—	6	1	—	—	—	—	—	—	10	3	2·9	0·9	—	2	—	5	98	28·1
Canterbury	21,704	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cardiff	117,012	—	—	20	6	4	—	—	—	9	1	—	—	—	—	—	—	33	7	3·7	0·8	—	—	3	1	190	21·2
Chatham	30,000	—	—	9	—	5	2	—	—	1	—	—	—	—	—	—	—	15	2	5·5	0·8	—	—	6	—	49	19·2
Cheltenham	47,200	—	—	3	—	1	—	—	—	—	—	—	—	—	1	1	1	5	2	1·2	0·5	—	—	1	1	82	20·5
Coventry	52,000	—	—	1	—	—	—	—	—	2	1	—	—	—	—	—	—	3	1	0·8	0·3	—	—	3	1	84	21·1
Darlington	39,000	—	—	9	—	1	—	—	—	—	—	—	—	5	—	—	—	15	—	4·5	—	—	—	—	1	55	16·6
Darwen	36,500	—	—	8	—	—	—	—	—	1	—	—	—	—	—	—	—	9	—	2·9	—	—	—	—	1	101	32·6
Derby	100,871	—	—	25	1	9	2	—	—	7	1	—	—	—	—	—	—	41	4	4·2	0·4	—	7	2	1	213	22·0
Devonport	50,000	—	—	33	4	2	2	—	—	—	—	—	—	—	—	—	—	35	6	8·2	1·4	—	—	3	—	103	24·2
Dewsbury	33,000	—	—	4	3	2	—	—	—	2	—	—	—	—	—	—	—	8	3	2·9	1·1	—	—	1	—	68	24·3
Dover	31,483	—	—	4	—	—	—	—	—	—	—	—	—	—	—	—	—	4	—	1·5	—	—	8	—	—	51	19·1
Dundee	166,027	—	—	23	2	10	4	3	—	12	—	—	—	—	—	—	—	48	6	3·4	0·4	—	4	18	6	327	23·2
Edinburgh	271,135	—	—	78	1	36	12	—	—	27	2	—	—	—	—	—	—	141	15	6·1	0·7	—	42	29	1	460	20·0
Exeter	39,000	—	—	6	1	—	—	—	—	2	—	—	—	—	—	—	—	8	1	2·4	0·3	—	—	12	—	88	26·6
Gillingham	26,000	—	—	15	4	1	1	—	—	—	—	—	—	—	—	—	—	16	5	7·2	2·3	—	—	2	—	55	24·9
Gorton	41,000	—	—	9	2	3	3	—	—	5	1	—	—	—	—	—	2	17	8	5·4	2·5	—	1	1	—	93	29·6
Great Yarmouth	50,272	—	—	1	—	2	—	—	—	42	3	—	—	—	—	—	—	45	3	11·7	0·8	—	—	1	2	68	17·6
Greenock	79,312	—	—	12	1	3	4	—	—	4	—	—	—	—	—	1	1	20	6	5·3	1·0	—	—	6	2	144	23·7
Grimsby	....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Guildford	13,428	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Halifax	82,500	—	—	20	—	5	2	—	—	6	—	—	—	—	—	1	—	32	2	4·6	0·3	1	1	2	1	193	27·5
Hanley	56,587	—	—	13	2	—	—	—	—	3	2	—	—	—	—	—	—	16	4	3·3	0·8	—	—	—	—	108	22·5
Heston & Isleworth	25,288	—	—	8	—	2	—	—	—	4	1	—	—	—	—	—	—	14	1	6·5	0·5	—	1	—	—	47	21·9
Heywood	27,000	—	—	3	1	—	—	—	—	—	—	—	—	—	—	—	—	3	1	1·3	0·4	—	—	2	—	40	17·4
Huddersfield	94,253	—	—	10	—	1	—	—	—	3	1	—	—	—	—	1	—	15	1	2·1	0·1	—	—	—	1	169	23·3
Hull	213,833	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

Sanitary Districts.	Estimated Population middle of 1890.	Small-pox.		Scarlet Fever.		Diphtheria.		Typhus Fever.		Enteric Fever.		Cholera.		Relapsing Fever.		Puerperal Fever.		Totals of Preceding Columns.		Annual Rate per 1,000 Persons Living.		Deaths from other Zymotic Diseases.				Deaths from all causes.	Death-rate from all Causes per 1,000 Persons Living.
		Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Ill-defined Fever.	Measles.	Whooping-cough.	Diarrhœa.		
Jarrow	32,000	—	—	4	—	2	2	—	—	4	4	—	—	—	—	—	—	10	6	4·1	2·4	—	—	1	—	47	19·1
Keighley	29,660	—	—	35	5	7	—	—	—	1	—	—	—	—	—	1	1	44	6	17·5	2·4	—	—	—	2	78	31·0
Kidderminster	26,000	—	—	7	—	—	—	—	—	—	—	—	—	—	—	—	—	7	—	3·2	—	—	1	—	—	47	21·3
Lancaster	28,301	—	—	9	1	—	—	—	—	1	—	—	—	—	—	1	—	11	1	4·1	0·4	—	—	3	—	62	22·8
Leamington	24,871	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	—	—	—	—	...	...
Leek	14,057	—	—	1	—	—	—	—	—	1	—	—	—	—	—	—	—	2	—	1·7	—	—	—	—	—	22	18·4
Leicester	154,344	—	—	27	—	1	—	—	—	9	2	—	—	—	—	—	—	37	2	3·1	0·2	—	—	—	—	235	19·8
Llanelly	23,559	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	1	—	0·5	—	—	—	5	—	48	24·0
Macclesfield	37,514	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	0·3	—	—	1	9	—	84	29·2
Manchester	379,437	—	—	140	21	55	10	—	—	31	8	—	—	—	—	—	1	226	40	6·2	1·1	—	24	21	10	1,324	36·4
Norwich	95,352	—	—	2	1	8	2	2	1	18	3	—	—	—	—	—	—	30	7	4·1	1·0	—	6	1	1	168	23·0
Nottingham	230,000	—	—	78	4	7	2	—	—	21	3	—	—	—	—	—	—	106	9	5·6	0·5	—	—	5	5	386	20·5
Oldham	146,716	—	—	42	4	2	—	—	—	1	—	—	—	—	—	1	1	46	5	4·1	0·4	—	—	9	5	265	23·5
Portsmouth	142,952	—	—	63	—	9	2	—	—	13	2	—	—	—	—	—	—	85	4	7·8	0·4	—	—	1	—	248	22·6
Preston	105,163	—	—	39	8	2	1	—	—	5	—	—	—	—	—	—	—	46	9	4·6	0·9	—	—	—	8	300	29·7
Reading	62,271	—	—	1	—	—	—	—	—	2	—	—	—	—	—	—	—	3	—	0·6	—	—	—	7	2	91	19·0
Ripon	7,670	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	1·5	—	—	—	—	—	13	20·0
Rochdale	73,772	—	—	5	—	—	—	—	—	1	—	—	—	—	—	—	—	6	—	1·0	—	1	—	1	—	127	20·3
Rochester	25,000	—	—	17	—	—	—	—	—	2	—	—	—	—	—	—	—	19	—	9·0	—	—	—	—	—	39	18·4
Rotherham	36,807	—	—	7	1	—	—	—	—	2	—	—	—	—	—	—	—	9	1	2·5	0·3	—	1	1	—	69	19·5
Rowley Regis	32,100	—	—	2	—	—	—	—	—	1	—	—	—	—	—	1	—	4	—	1·5	—	—	3	3	—	70	25·7
Salford	242,509	—	—	74	12	44	10	2	—	31	8	—	—	—	—	—	—	151	30	8·1	1·6	—	2	26	9	487	26·2
Scarborough	36,200	—	—	8	—	—	—	—	—	1	—	—	—	—	—	—	—	9	—	3·2	—	—	—	1	—	40	13·3
Sheffield	332,837	—	—	191	40	42	10	—	—	9	4	—	—	—	—	1	1	243	55	8·6	1·9	—	7	14	6	892	31·6
Smethwick	34,300	—	—	—	—	—	1	—	—	—	1	—	—	—	—	—	—	—	2	—	0·7	—	—	1	1	46	15·8
Southport	41,585	—	—	6	2	2	2	—	—	1	—	—	—	—	—	—	—	9	4	2·5	1·1	—	—	—	1	63	17·8
Stafford	21,660	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	1	1	0·5	0·5	—	—	—	—	44	23·9
Stalybridge	28,184	—	—	8	1	—	—	—	—	3	2	—	—	—	—	—	—	11	3	5·1	1·4	—	—	5	2	70	32·4
Stockton-on-Tees	50,000	—	—	6	3	1	1	—	—	10	6	—	—	—	—	—	—	17	10	4·0	2·4	—	—	3	1	96	22·6
Stretford	21,000	—	—	3	1	3	1	—	—	—	—	—	—	—	—	—	—	6	2	3·4	1·1	—	—	3	—	29	16·3
Sunderland	136,506	—	—	65	10	13	2	—	—	15	4	—	—	—	—	2	—	95	16	9·1	1·5	1	2	—	—	238	22·7
Swansea	93,700	—	—	54	11	2	2	—	—	2	2	—	—	—	—	1	1	59	16	7·4	2·0	—	38	7	1	222	27·9
Todmorden	25,750	—	—	—	1	—	1	—	—	—	—	—	—	—	—	—	—	—	2	—	0·9	—	—	—	—	35	16·0
Tynemouth	49,538	—	—	14	2	2	1	—	—	—	—	—	—	—	—	1	1	17	4	4·5	1·1	—	—	—	—	100	26·3
Wakefield	33,676	—	—	1	—	3	1	—	—	1	—	—	—	—	—	—	—	5	1	1·7	0·3	—	1	1	—	78	27·3
Wallasey	33,500	—	—	19	4	1	—	—	—	2	—	—	—	—	—	—	—	22	4	7·7	1·4	—	—	1	—	52	18·3
Warrington	50,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
West Bromwich	64,500	—	—	18	1	1	1	—	—	2	—	—	—	—	—	—	1	21	3	4·2	0·6	—	—	5	1	127	25·7
West Ham	180,000	—	—	45	3	13	5	—	—	12	1	—	—	—	—	1	—	71	9	4·6	0·6	—	2	19	—	282	18·4
Weymouth	14,134	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	0·8	—	—	—	—	—	21	17·5
Whitehaven	20,000	—	—	—	—	1	1	—	—	—	—	—	—	—	—	—	—	1	1	0·7	0·7	—	—	—	—	48	31·3
Widnes	30,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Wigan	54,509	—	—	6	—	—	—	—	—	5	—	—	—	—	—	2	—	13	—	2·5	—	—	—	2	4	51	9·8
Willesden	57,158	—	—	18	—	4	1	—	—	4	—	—	—	—	—	1	1	27	2	6·2	0·5	—	—	8	—	65	14·8
Wolverhampton	83,407	—	—	10	2	6	—	—	—	5	—	—	—	—	—	—	—	21	2	3·3	0·3	—	—	5	3	162	25·3
York	75,327	—	—	11	—	1	—	—	—	6	1	—	—	—	—	—	—	18	1	3·1	0·2	—	2	4	2	146	25·3

SPECIAL REPORTS, ABSTRACTS, &c.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.

Epidemic Influenza.

At the meeting of March 14, Mr. H. Armstrong, president, in the chair, Dr. Frank G. Clemow, who had recently returned from St. Petersburg, read a paper on "Epidemic Influenza," with special reference to its etiology, as illustrated by the history of the present and previous epidemics. He said that undoubted records existed of a large number of more or less widespread epidemics from 1510 to 1847 when last it visited this country, but Dr. Theophilus Thompson was not disposed to attach much credit to the older accounts, and even Hirsch did not carry his enumeration further back than the year 1173. Dr. Clemow, however, considered that when we found a description of "a pest that attacked nearly everyone with fever, cough, catarrh, and pains in the head and limbs, but of which very few died, we were justified in recognizing it as influenza." One such was referred to by Hippocrates and Livy about 412 B.C., but more explicit descriptions have been handed down to us by Bishop Gregory, of Tours, 591 A.D., and others in the ninth and tenth centuries. During the next three hundred years only one epidemic seemed to have been noticed, viz., that of 1173, which extended over Germany, Italy, France, and England; but from 1327 onwards they appeared to have recurred more frequently.

While we were so much in the dark as to the true pathology and etiology of the disease Dr. Clemow considered the name influenza, *i.e.* some unknown influence given to it by the Italians of the sixteenth century, as at least unobjectionable and better than "catarrhus contagiosus," or others which assumed its nature or implied as essentials what were merely accidents of the disease. The present epidemic was reported from Siberia in October, and spread over the whole of Russia during November. In the first ten days of December, Poland, Austria, Germany, Denmark, and Sweden; in the next, the Balkan States, France, and Spain; and, in the last, Holland, Belgium, Norway, Italy, and England were successively attacked. In the first half of January it spread to Canada and the United States; and, in the latter, to Tunis, Egypt, and Persia; within the next month it had appeared in India and at the Cape.

The progress of the epidemic was thus from East to West, modified or diverted by mountain ranges and seas, and in no relation, if not actually opposed to the direction of prevailing winds. Accounts had, however, been recently received of its existence in Greenland and Saskatchewan as long since as last spring, whence it would seem that it might have been carried to Siberia, and thus to have performed the entire circuit of the globe.

Referring to the meteorological conditions attending or co-existing with the epidemic he confessed that it was impossible to arrive at any satisfactory conclusion as to any relation of the nature of cause and effect; if anything mild weather in winter seemed to favour it. The most remarkable phenomenon of its spread was the rapidity, almost suddenness with which large numbers of persons or entire communities were attacked, exceeding anything observed in the case of other infectious diseases, and not easily explicable on the ordinary theory of contagion alone, but apparently pointing to aerial conveyance of some kind. As examples he cited one which came under his personal observation of 220 out of 260 men employed in a Government establishment at Cronstadt being attacked within a few hours, and the historical instances of half a million persons being seized in London in 1847 in a few days, and of 40,000 in St. Petersburg in 1782, while the thermometer rose between 2 A.M. and 6 P.M. from 47° below zero F. to 45° above.

But whether ordinary personal intercourse could or could not wholly explain these phenomena, the records of the exemption or otherwise of inmates and attendants respectively of asylumns, prisons, &c., and other observations of a like kind left no doubt as to its contagiousness, while they also served to determine the incubation period as about two days.

On two propositions that had been put forward in connection with influenza, that it caused the temporary disappearance of other diseases, and that it stood in some casual relation, either as a precursor or a consequence of other epidemics, of which cholera most closely concerned us, he stated his belief that they were merely the expressions of bare impressions, the former being actually opposed to experience, and the latter having no real basis in facts. Two of the European cholera epidemics, indeed, happened to follow on or to accompany those of influenza; but in the other three no such relation had existed, and there was no reason to think that it would again except as a simple coincidence.

NORTH-WESTERN BRANCH OF THE SOCIETY OF MEDICAL OFFICERS OF HEALTH.

At a recent meeting of the North-Western Branch of the Society of Medical Officers of Health, in Manchester, an interesting discussion took place on a paper contributed by Dr. Kenyon on

"The Hygiene of Exercise."

The introduction of cycling had, he said, brought a pleasing form of exercise within the reach of large numbers who had otherwise no facility or inducement to exert their physical energies. One reason why so many people settled down to a life of ignoble ease was that among youths the tendency was to overdo it. Probably there was no exercise which could surpass football, but, apart from the brutality of which it was accused, how many of its votaries did anything to keep up their trained powers as soon as they began to realise that the time for its indiscriminate indulgence had passed away? Then, again, the cyclist—at any rate, the middle-aged cyclist—laid aside his machine and resigned himself to inglorious ease during the long and tedious winters. Again, while football was, from its roughness, dangerous to life and limb, rowing, cycling, and walking exercised special sets of muscles, and did not give the best result in return for a limited expenditure of time and power. Most gymnastic exercises fatigued a few muscles here and there, producing a minimum of good for a maximum of exertion. Walking, which was the great resource of every-day life, was an exercise of endurance, and took a long time to produce much effect, and, although far better than nothing, it was not the best known means for beneficially affecting the system. In commencing training the great point was to educate the heart and lungs to perform suddenly without injury a great amount of work. To do that there was nothing better than the practice of running and jumping.

The President said he thought football, which was the great game at present, was a very valuable form of exercise for players who were trained and who were playing football every day of the week. But the mass of football players, except perhaps a few professionals, were lads in workshops or clerks in offices all the week, and who left business on Saturday at 1 o'clock and went and engaged for a period in what was frightful exercise. Independently of the danger that arose of broken bones, it seemed to him that there must be a large increase of heart disease and diseases of the blood vessels, which must have their origin in football as it was played at the present time.

THE NATIONAL ASSOCIATION OF SANITARY INSPECTORS.

Manchester Centre.

The First Annual Dinner of the Association was held on Saturday evening, Jan. 25, 1890, at the Grand Hotel, Manchester.

The Right Hon. J. T. Hibbert (President of the Asso-

ciation) presided, accompanied by Dr. Tatham (Medical Officer of Health for Manchester), Dr. Ransome (Owens College), Mr. Alderman Schofield, Mr. Alderman Griffin (Deputy-Chairman Nuisance Committee, Manchester), Mr. E. J. Broadfield (Manchester School Board), Mr. Herbert Fletcher (Bolton), Mr. Lloyd Higginbottom (Chairman of Gorton Local Board), Mr. W. G. Jones (Chairman of the Sanitary Committee, Gorton), Dr. Mullen (Wilton Hospital).

Members present: Mr. T. S. Prescott (Chairman of the Council), Mr. J. Marshall (Stockport), Mr. Job Robertshaw (Manchester), Mr. W. Bland (Barton-upon-Irwell), Vice-Chairman of the Council; Mr. W. Wilkinson (Salford), Hon. Treasurer; Mr. A. Baines, Hon. Secretary; Mr. T. Potter (Ashton-under-Lyne), Mr. Taylor (Horwich), Mr. Wood (Bury), Mr. Summerfield (Dukinfield), Mr. Manley (Atherton), Mr. Maguire (Huddersfield), Messrs. J. Gilmour, W. Park, and J. C. Hague (Manchester), Mr. Oliver (Stalybridge), Mr. Smith (Didsbury), Messrs. J. Crossley, J. Marriott, J. Stevenson, H. Rider, and C. Tanny (Salford), Mr. W. Wilkinson (Derby), Mr. Thos. Woodhouse (Accrington), Mr. J. G. Shawcross (Withington), Messrs. C. R. Billingham, and T. Bebbington (Stockport), Mr. Rushworth (Oldham), Mr. F. Sharratt (Droylsden); also Mr. R. K. Lakin (Manchester).

Dr. TATHAM proposed "The Association." He observed that he looked with very much more interest to their Society than to the pleasure which it would give him to say complimentary things of it. They were a young Association. Fifteen years ago—in the year 1875—when the first really effective Public Health Act became law, sanitary inspectors were very much at a discount. And looking back upon that time and upon the class of men who were then doing the work of sanitary inspectors, that was not much to be wondered at. The sanitary inspectors of those days were sanitary inspectors only in name, with a few very remarkable exceptions which proved the rule. A very great change had since taken place in the whole body of sanitary inspectors throughout the kingdom. He believed he was well within the mark when he said that a very large proportion of the sanitary inspectors of England had set themselves to work honestly to faithfully qualify themselves for the very important position which they held. He spoke with knowledge when he said that their position as sanitary inspectors in the future depended not on the public but on themselves. He could not help thinking that in the present year there was a very great change in the state of public opinion as compared with that which existed in 1875. He remembered the time when a sanitary inspector was looked upon by the public as a very expensive luxury, and when people did not know what they existed for. Since that period things had occurred which had shown that a really conscientious, hard-working sanitary inspector could make himself worth all that he got. Within the last few years the Sanitary Institute of Great Britain had organized a system of examination by means of which those who wished to become certified inspectors could do so. He was not going to say that a man could not be an excellent sanitary inspector without possessing that certificate, but there was no doubt that it was very well worth while to get the stamp of authority upon one's abilities, and that the possession of the diploma to which he had referred would in the long run help to secure a man a better position He was glad to find that the Society was so prosperous, and that its members had the work of sanitation at heart. He urged upon them that they should combine with similar associations, because he was sure they would find strength in such a union.

The PRESIDENT expressed the hope that the Association would, as far as possible, endeavour to carry out the suggestions made by Dr. Tatham, and in particular those in which he advised the members to obtain certificates and to unite with kindred societies. In connection with the question of the administration of the poor law, he had seen the advantages of union. Then there was the very important question of superannuation which they would forward by uniting together. He did not think they could, as a local association, obtain an Act of Parliament to carry out that principle, but by union they might make a joint effort and prevail upon the Government either to bring in a bill or, if they would not do that, to give their support to a bill. Under the present law there was a certain class of officials who were entitled to pensions and superannuation allowances, such as the police, attendants in lunatic asylums, and prison attendants. It has always been thought that it would be very difficult to obtain a sufficient body of useful men to fill those positions unless they had something to look forward to when they left their particular office. There was a certain amount of danger in those occupations, and that had been recognized in providing pensions for the men who discharged them. Sanitary inspectors had danger to undergo also in every duty they undertook in connection with infectious disease. They had therefore a very good case in asking for a superannuation allowance, and he hoped sincerely that they would succeed in their object. As a member of the Sanitary Commission which gave birth to the first Public Health Act, and having been in office at the Local Government Board when that Act went through Parliament, he corroborated what Dr. Tatham had said as to the progress of public opinion in the matter of sanitary science. He had also been glad to see the great growth of information amongst representatives of rural sanitary authorities. Whereas at first they would scarcely consider questions of drainage and water supply, or carry out other great duties which they should discharge, they had grown to be zealous in that service. He knew no question upon which there had been a greater growth of opinion than that of sanitary laws. In the past fifteen years there had not only been great progress in connection with sanitary matters, there had been equal progress in the improvement of the health of the nation. If they compared the last ten years with the twenty or thirty years that preceded them, they would find that half a million deaths had been prevented. The enforcement of sanitary regulations had prevented an enormous amount of sickness amongst the working classes—a matter which to them was of the utmost importance. He therefore looked upon that Association as the best friend of the working classes. But though a great deal had been done, a great deal remained to be accomplished. In the presence of Dr. Tatham he could not avoid referring to the high death-rate of Manchester. Mr. Alderman Schofield, who had so worthily filled the office of Chairman of the Health Committee for a great many years. would, he was sure, admit that a good deal yet remained to be done in the matter of improving the health of the people of the city. He did not blame the Health Committee, because they were doing their work well, and they had a very difficult task to carry out. The city was peculiarly situated, as it were almost at the bottom of a dish; there was a most polluted and a most disgraceful river running through it; and there was a considerable amount of smoke which he thought might be called opaque. He was glad to see that the Corporation were making efforts to provide better dwellings for the working people, and he congratulated them upon it. He was pleased to know that they were about to remove some of the very faulty and very bad dwellings which existed in our midst. No one could read the statistics as to the health of Manchester without seeing that the blot lay in the over-populated districts, where the houses were crowded, and where there was no ventilation. He should like to see an effort made to purify the river that ran through Manchester, and that some plan might be adopted by which all the towns and authorities upon the Irwell and its tributaries might be able to combine together for the purpose of dealing with the question. He believed that was the only way in which it could be dealt with effectually. The question of smoke was, he believed, very much in the hands of the magistrates and the police, and indeed some people said that some of the magistrates were the greatest sinners. He was told by

an engineer that in the future there might be no difficulty as to the consumption of smoke, and that people did not know how economical it was to consume it. Those questions did not affect Manchester alone, but all large communities. He thought pressure should be brought to bear upon the Local Government Board to get them not only to amend the Public Health Act, but to codify it. He would only have one Act for every part of the country, and not one for urban districts and one for rural districts. With reference to this question he desired to point out that many persons were blamed for intemperance and for indulging in strong drink. He thought that if he lived in some of the places that they had to live in he should be inclined to follow the same system. He had never been able to make up his mind whether the unhealthy homes of the people did not drive men and women into the public-house rather than that the public-house was the means of their going into the lowest quarters of the town. There was, therefore, a double object in carrying out better sanitary measures; they would not only give the people of the city better homes, but they would raise their moral condition. No better work could be found in the time in which we lived.

Mr. LLOYD HIGGINBOTTOM proposed "The Mayor, Aldermen, and Councillors of the City of Manchester." He expressed the hope that the Manchester sewage scheme might be as successful as the Thirlmere water scheme promised to be, and said he could not but think that the Corporation had been rather tardy in taking the necessary steps for bringing the Rivers Pollution Act into effect. He trusted that the delay would result to the advantage of the people, inasmuch as the Corporation would benefit by the experience of other communities.

Mr. Alderman SCHOFIELD said he believed the Corporation stood high in the opinion of the citizens and in the opinion of the kingdom; and having now been a member of it for about twenty-four years he felt that it deserved that opinion. As Chairman of the Health Committee—which position he had, however, now relinquished—for twenty years. he fully appreciated the valuable services rendered by the sanitary inspectors. They had done a wise thing in forming that Association. He entirely agreed that they were entitled to superannuation. As to the question of the death-rate of Manchester, it was the fashion to say that the death-rate was high, and that it was a disgrace to the city. But he was not ashamed of the death-rate of Manchester. He did not mean to say that it could not be improved. but comparing it with other places he was not ashamed of it. If any place in the kingdom should have a high death-rate, that place was Manchester. All things were relative. In Manchester we were entirely an urban population. We had no suburban population. All our best lives went to live outside Manchester. As a matter of fact, the only suburban population we had was that of Rusholme, with a population of about 13,000, which bore very little upon the death-rate of the whole city. In Salford there were Broughton and Pendleton, which formed at least a third of the population of the borough. Those two districts, which contained the good lives, were included in the statistics of the borough, and thus went to the reduction of the death-rate. If Manchester were to take what really belonged to her she should include Bowden and Sale, both of which places were made up of Manchester people. They must not think Manchester was doing nothing because her death-rate was comparatively high. What we wanted was a greater amount of ventilation and a clearer atmosphere. Another cause of the high death-rate was that people would not make the best of the circumstances about them. He anticipated good results from the pulling down of unhealthy dwellings in Ancoats.

The toast of "The Visitors" was responded to by Dr. RANSOME, who said that unless sanitary workers were well backed up by the public opinion of the district in which they worked, they would make but little progress. He was present simply as a representative of the voluntary element, but he could see that they did a considerable thing in the advancement of sanitary science when they even ventured at times to criticise some of the work done by officials and corporations. Mr. Alderman Schofield had pointed to some of the reasons for the high death-rate of Manchester, and had urged that there were other large towns which had the advantage of suburban districts to lower, *pro rata*, their death-rate. The point he (Dr. Ransome) made with reference to the high death-rate was that the death-rates of certain districts of Manchester were far too high. He was perfectly sure that the death-rate of certain districts of Manchester and Salford was far too high. In the reduction of the death-rate the work of the sanitary inspector was most important, and he strongly urged them not to relax their efforts. A great deal was due to the people themselves, but at the same time there were structural defects in the houses as reasons why the death-rate was high. He urged the members of the Association to obtain diplomas, and hoped that they would get justice done them when they approached the Government on the question of superannuation.

Mr. E. J. BROADFIELD, speaking as a member of the Manchester School Board, said he hoped the next bill relating to the public health would make provision for a larger space per child in the public elementary schools.

Mr. W. WILKINSON, Chief Sanitary Inspector. Derby, referred to the action which had been taken by the local authorities in matters of sanitary reform in the town he represented, and to the weakness and ignorance which they had to deal with to save persons from the dangers of disease, &c.

The toast of "The Council of the Association (Manchester Centre)" was proposed by Mr. Councillor HERBERT FLETCHER, Bolton, who referred to the injury which arose to the public health by what was known as the smoke nuisance, and which he pointed out was in a great measure preventible.

Mr. PRESCOTT, Chairman of the Council, said that no doubt much had been done by local authorities of recent years to check the spread of infectious diseases, and they could point with satisfaction to the result of their efforts to stem the spread of diseases of this character. He referred also to the risks to which sanitary inspectors were exposed in the pursuit and discharge of their duties. and to the unfavourable way in which their efforts to arrest the spread of disease by disinfecting dwellings were sometimes received. Happily that feeling was fast passing away, and the people had begun to recognize the necessity of availing themselves of the means of checking these diseases at the very commencement. In conclusion he said that he thought that the dangers to which sanitary inspectors were exposed in having to go into the very hotbed of diseases of so dangerous a character entitled them to compensation, especially if in the discharge of their duties they contracted some fatal disease. He contended that a stronger or more fair case could not be made out for recognition by the Government or the public than would be presented by an inspector who in pursuit of his labours contracted such a disease. At present the local authorities had not power to award compensation, and the widows and orphans of the officers under such circumstances were consequently frequently left unprovided for and in distress. This was the primary reason why their Association had been formed, and he trusted those present would at all times be ready to assist them in any efforts they might make to secure for themselves and their families a provision against the many risks to which, as sanitary inspectors, they were exposed.

MEETING IN OLDHAM.

THE monthly meeting of the National Association of Sanitary Inspectors, Manchester District, was held in Oldham on March 15, when there were about twenty members present. The company visited the places of

interest in the town, including the Baths and Infirmary, the sanitary arrangements of which institution were greatly admired.

Mr. THOMAS RUSHWORTH, chief inspector of Oldham, read a paper, entitled,

"A REVIEW OF FIVE YEARS' SANITARY WORK IN OLDHAM."

Councillor WADDINGTON, who took the chair, said:—In Oldham they treated the excreta in the old-fashioned style, and as regarded the ashes, at present there was a sub-committee who were getting all the information they could respecting the treating of ashes, so that Oldham could follow the example set by some of the larger towns. They saw a system last week which was supposed to be an improvement upon Friar's system. The principal thing about the system was that it shut off the draft while the men were cleaning it, and thereby prevented any dust escaping to the immediate neighbourhood.

Mr. RUSHWORTH at the outset estimated the population of the borough at 140,000, and then proceeded to give briefly the powers vested in a sanitary authority. The Sanitary Committee of Oldham had offices at 2, Mill Street, and these offices were open from 9 A.M to 6 P.M., excepting Saturday. At these offices were lodged all complaints respecting unsanitary property and information respecting suspected cases of infectious disease. The sanitary authority, in addition to looking after the removal of nuisances, had also to prevent the sale of adulterated foods. In Oldham there were 6 sanitary inspectors and a medical officer, a gentleman of high scientific and literary attainments, and also two clerks; and when it was stated that the number of inspections and notices made out yearly was many thousands, it would be admitted that the office did not exist for mere bagatelle purposes. There was also a health yard, where the work of disinfecting was carried on, and a hospital. The latter was an admirable institution, and had been erected by the Sanitary Committee. The following extract from the medical officer's report for 1884 would give them some idea of the value of the institution:—"Of 289 cases of scarlet fever, 112 were removed to the hospital, and 10, or 8·9 per cent., died; 177 remained in their homes, and 23, or 13 per cent., died. Of the 101 cases of fever (1 typhus and 100 typhoid) 36 were removed to the hospital, and 4, or 11·1 per cent., died; 65 remained in their homes, and 18, or 27·6 per cent., died." The weekly return of births and deaths received from the registrar enabled them to estimate the birth and death-rates, and to compare the disease in one ward with the disease in another. By the compulsory notification of infectious diseases returns were now furnished by medical men in the town, and on the receipt of such a return a visit was made to the case within 24 hours. During the last 5 years 5,702 cases had been reported, and 14,143 visits had been paid: 1,547 patients had been removed to Westhulme Hospital; 3,348 houses had been disinfected; and 47,459 articles had been removed to the health yard for disinfection or destruction. He was inclined to think that they had no great cause for alarm on the score of their food being adulterated, if they were to judge by the results furnished by their public analyst. Out of the 375 samples purchased and analysed during the past 5 years only 37, or a little over 10 per cent., were found to be not genuine. Milk was occasionally found to be robbed of its fatty solids, but on the whole they were in Oldham favoured with a good milk supply. Much, however, remained to be done in the way of improving the sanitary conditions of their farms and dairies. It had been their duty to point out to cattle keepers the necessity for being careful in the use of shoddy in the shippons. The shoddy was very light, and might, if not used carefully, get into the milk. Another important duty imposed upon sanitary authorities by the Workshops and Factory Act of 1883 was the inspection and registration of bakehouses. About 60 of the largest bakers and confectioners were on their registers, and during the past 5 years 1,825 visits had been paid to places kept by these persons, and the sanitary defects pointed out. As regarded the Contagious Diseases (Animals) Act he held that legislative powers were yet required to make it incumbent on the keepers of live stock to insure against loss by disease as property owners insured against fire. Sanitary authorities had a right to demand that the persons within their district conducting a risky and dangerous business should help them to liquidate the loss which at the present time the ratepayers were called upon to bear collectively. The meat supply of the town was not altogether what they would like it to be, although he believed the meat usually exposed for sale in Oldham would compare favourably with the meat exposed for sale in other towns. There were 82 private slaughter-houses in the town, and this entailed a great amount of time in visiting the places. The little sharp practice in smuggling into the town by the railways cattle of a doubtful or suspicious character had now in a great measure been stopped by a diligent attention to the arrivals at the different stations. During the five years about 21,695 lbs. of unsound meat had been destroyed. When he (Inspector Rushworth) first came to Oldham in 1884 the question of offensive mill lodges was uppermost in the minds of the public and frequently the absorbing subject of contention on the part of the Sanitary Committee. He was of opinion that this nuisance had been lessened considerably. The smoke nuisance was now to the fore, and much had been done in the way of preventing the nuisance and making the air more pure. What was required by the manufacturers and mill owners was an apparatus neither too costly nor too intricate in its working. During the five years 2,803 observations had been made by the inspectors, and in 979 cases the time allowed (twelve minutes in the hour) had been exceeded. The total number of reported nuisances and sanitary requirements entered on the books during the five years had been no less than 12,860. The paper also dealt with the inspection of houses and drains, and gave the amount of refuse collected by the nightsoil and ashes department.

DISCUSSION.

Mr. M'GUIRE (Huddersfield) thought as the sanitary department was the most important part of a Corporation the offices should be in the Town Hall. As a rule they would find sanitary offices located in some back street. Another thing which had struck him in the paper was this. It was stated that they had not very much adulterated food in Oldham. He (Mr. M'Guire) thought there should be no adulterated food at all. Then with regard to the samples procured during the five years. It was stated that only 367 samples were obtained, or an average of 73 samples per year. He considered that, for a place like Oldham, was a very small amount, and he should have expected a great deal more. With respect to diseased meat he thought veterinary surgeons should be compelled to notify to the sanitary authorities places where there were diseased cattle. He considered that this would materially help in checking the traffic in diseased meat. Then there was the question of slaughter-houses. He thought the Corporation should cease to grant licenses, and instead provide a public slaughter-house. Mr. M'Guire also condemned the practice of tapping the sewers unless something was done towards clarifying the water before it was allowed to run into the mill lodges. Mr. Rushworth, judging by the paper, seemed to have a good committee, and he (Mr. M'Guire) considered that it was what he ought to have. Sanitary inspectors ought to have good committees and good salaries.

Mr. PRESTCOTT (Gorton) asked for what purpose they used shoddy in shippons.

The CHAIRMAN: They use it instead of sawdust.

Mr. PRESTCOTT thought where it was used great care should be taken that it was not allowed to get into the milk.

Mr. TOFT (Lees) thought in towns like Oldham the sanitary inspectors had more facilities for carrying out their duties than they had in small places. He believed in Oldham the sanitary officers were empowered to take prompt action when the urgency of the case required it, whereas in some of the small places they had to obtain the consent of the Sanitary Committee, which only met once a month, before they could do anything.

Mr. SHAWCROSS (Withington) condemned the practice of tapping the sewers for the mill lodges. This was a very deplorable state of things. In his small district, which only comprised some 22,000 inhabitants, they had been compelled to supply a sewage farm, and he thought it was only right that some of the larger towns should be compelled to supply such farms. Take Stockport, for instance, a town with 70,000 inhabitants. In Stockport they were allowed to pour their sewage into the very river that passed through Withington. He not only contended that sewage water should be clarified before it was allowed to run into the mill lodges, but that it should, especially if there were a great many water-closets, be kept out of the lodges altogether.

Mr. BAINES (Manchester) condemned the practice of tapping the sewers, and he hoped the people of Oldham would do away with that kind of thing. He also held that private slaughter-houses should be done away with, and public slaughter-houses opened.

Mr. RUSHWORTH, in replying, said they were compelled to tap the sewers because of the peculiar situation of the town.

On the motion of Mr. M'GUIRE, seconded by Mr. MARSHALL, a vote of thanks was accorded to Mr. Rushworth for his paper, and a similar compliment was also paid to Councillor Waddington for presiding.

Councillor WADDINGTON, in responding, said he thought some system of purifying the sewage water should be adopted before it was allowed to run into the mill lodges. As to a sewage farm, the sub-soil of Oldham, which was of very solid clay, would not allow of one being opened.

YORKSHIRE CENTRE.

A GENERAL meeting of the Yorkshire Centre of the National Association of Sanitary Inspectors was held on March 22 at the offices of the Sowerby Bridge Local Board.

Mr. T. PRIDGIN TEALE, of Leeds, president, occupied the chair. There was a large attendance of members representing the following urban and rural sanitary authorities:—Leeds, Bradford, Sowerby Bridge, Denby, Kirkheaton, Ovenden, Thornton, Batley, Earlsheaton, Holmfirth, Warley, Bingley Township, Churwell, Morley, Altofts, Hebden Bridge Halifax, Skipton, Oakworth, York, Keighley, New Mill, Aberford, Woodlesford, Soothill Upper, and Huddersfield. The members were entertained at lunch by Mr. J. F. Clay, C.C., chairman of the Sowerby Local Board.

Mr. F. ROTHERA, surveyor to the Sowerby Bridge Local Board, read a paper on "Drainage and Ventilation of Dwelling-houses."

In the discussion which followed the various points raised by Mr. Rothera were taken up and many valuable suggestions thrown out, those taking part being Messrs. Mills, Handforth, and Thornber, Leeds; Sykes, Holmfirth; Burgon, Bradford; Atkinson, York; Firth, Huddersfield; Wilkinson, Altofts; Denham, Tadcaster; and Smith, Skipton.

The CHAIRMAN, touching upon some of the matters referred to in the discussion, said the question of the ventilation of sewers was a very important and difficult one. He agreed with those who said it was wrong to ventilate the sewers by fall pipes. Nor should the idea of ventilating by means of large chimney shafts be valued at more than it was worth, because the area of influence was limited to about 200 yards; but if there were sufficient chimneys to ventilate every 200 yards that would be a perfect system. The subject of ventilation was one that ought to be taken up by the medical and sanitary authorities with a view of arriving at a practical solution of the question. With regard to the laying of pipes, he said that ten times the present number of inspectors would be required if the laying down of every pipe was to be superintended. The only effectual method was to allow the work to be done only by men who were certified as competent, and who should be under the control of some person responsible to the sanitary authority. Of course that meant increased cost, but what was that compared to the cost now necessary in remedying defects? Moreover, by doing the work better to begin with the cost was diffused over the whole community, instead of falling upon a few innocent individuals.

Votes of thanks concluded the proceedings, after which the members were entertained to tea at the Royal Hotel by Mr. Clay.

The next meeting will be held at Manchester in June next, being the second annual meeting of the National Association of Sanitary Inspectors.

THE ASSOCIATION OF PUBLIC SANITARY INSPECTORS OF GREAT BRITAIN.

THE ordinary monthly meeting of the Association was held on April 5, at Carpenters' Hall, London, E.C.

Mr. HUGH ALEXANDER presided.

After the minutes had been read and confirmed, Messrs Foot (Bethnal Green), W. Sootweel (Hackney), and Whur (of Southend), were elected members of the Association, also Mr. G. M. Petty, surveyor, was elected an associate.

Mr. W. H. Watson, of St. James's, Westminster, was appointed a member of the Council in place of Mr. Stace, deceased.

The CHAIRMAN stated that he had received a communication stating the President's health was improving, and that he hoped to be able to fulfil his promise to be present and deliver an address at the provincial meeting to be held at Leamington on May 24. The announcement was received with much applause.

Mr. F. T. POULSON, Assoc.San.Inst., Chief Sanitary Inspector of Chelsea, read a paper entitled:—

"SOCIAL ENVIRONMENT."

The Lecturer said he chiefly proposed to generalise a number of features in man's surroundings as he was found, and the points he would principally consider were those of man as he now is, and how he was influenced in his physical nature by his relation to the universe. This would include the consideration of the arrangement of his physical nature to the natural elements and forces, his chances of survival in the struggle for existence, and his adaptation to circumstances. Man was a gregarious animal, herding together in masses, and for common protection mutually providing safeguards, as, finding in his first struggle for life that other animals were co-existent with him, of stronger physique and build, he was compelled to adopt this plan of life, and in consultation with his fellows decide how best they could survive under such circumstances. The community thus formed, it was to be hoped, would finally end in a broad liberal humanity, embracing mankind of all races acknowledging dependence on each other; and all questions of national superiority becoming subservient to the edicts of an elective assembly of all nations, commerce would not become deranged, as it frequently now was, by any two nations choosing to declare war; and wars and the cost of large standing armies would be rendered unnecessary. Having considered man physiologically, his food, &c., the lecturer referred to the action of the atmosphere and ventilation upon health, and said it was astonishing to find the number of ingenious devices which had been resorted to in order to exclude fresh air from dwellings—such as sand-bags placed across windows at the junction of sashes, thereby excluding the ingress of fresh air from the outside, and draught excluders fixed to doors, together with the stuffing-up of chimneys, &c. Under

these circumstances every inlet and outlet was choked, with the result that they found the occupants to be of the pale, weakly kind, liable to fall an easy prey to all forms of febrile disease. The system advocated by Sir Douglas Galton of introducing fresh warm air behind the fireplace was worthy of earnest consideration and support, and builders should be compelled by stringent laws to build houses on solid foundations with a layer of impervious material over the site, which previously might have been a rubbish shoot, or worse; whilst chimneys should be so constructed as to convey the smoke out of the house instead of into it. Houses should be provided with drains which did not leak, and formed with the view of carrying rapidly away the sewage from the dwelling without the alternative of receiving in return, rats, sewer odours, and other germs of disease. His reason for these remarks arose from his having seen great havoc caused by the dread disease of diphtheria in families living in houses built on damp heavy land, formerly used as market gardens, and which had been heavily manured. Speaking of the water supply, he would like to see water companies compelled to take other methods of obtaining their rates than by cutting off the supply, and advocated a compulsory constant service in all thickly inhabited districts. The disposal of domestic and trade refuse was a most important matter, and a more speedy removal of such refuse by the local authorities, and if possible by State control, should be adopted. If collected in closed vans and sent free into the heart of the country, to ground requiring it, it would pay for its disposal in producing heavier crops of food stuffs. With regard to the disposal of the dead, he would like to see an advance on cremation; and the high and regrettable rate of infantile mortality arose chiefly from errors in diet and mismanagement. He would like to see certain scholastic arrangements altered; at present there was too much pressure brought to bear upon the teachers, and when a child was absent on account of infectious disease, parents should not be harassed with threats of prosecution. The lecturer next treated of injurious trades, stating that out of 100 patients suffering from phthisis, a large proportion were needle makers. The survival of the fittest meant the survival of that individual who could best adapt himself to his surroundings by the fulfilling of those duties he was called upon to perform, and which he had the ability to do in such a manner as to brook no equal. The lesson he sought to draw was that the success of such depended very much upon themselves, their parents, and their education, especially on health and the knowledge how to retain it. Every man had a right to be healthy and live in a healthy house, and every householder in England could insist on having his house healthy. If he suffered from any nuisance injurious to health, he had only to apply to the sanitary authority of the district in which he lived, and if he pressed for their aid he could get the offensive thing removed. He could demand a sound drain, a good water supply, a tight roof, and clean walls. He could insist upon his domestic refuse being removed regularly, and also the removal of offensive refuse, which affected his health, from his neighbours' premises. If he would only learn physiology and sanitary science, keep his house clean, his own and the bodies of his children well washed, clothed, and fed, he might enjoy to the full the happiness to be derived from the possession of a sound mind, a sound body, and a healthy home.

Mr. TIDMAN moved a vote of thanks to the lecturer, and this was seconded by Mr. DEE, of Westminster.

The CHAIRMAN said he was in favour of a constant water supply, and not merely a supply for a few hours of the day. He would do away with cisterns, and gave some instances which had come under his notice, as chief inspector of cisterns, of such receptacles containing filth and fungus growth. With regard to buildings, especially schools, there was great reformation needed. Jerry building had been very common in our board schools, and in one instance, in which he had insisted upon the foundation being dug down several feet and the walls underpinned, beneath this foundation was discovered a disused cesspool.

THE SANITARY CONDITION OF THE LONDON HOSPITAL.

THE sub-committee appointed to inquire into the present sanitary condition of the London Hospital have submitted to the chairman and members of the House Committee the following report. The sub-committee was appointed because on October 22, 1889, the matron, in her report, brought to the notice of the House Committee an opinion expressed by Dr. Sutton and Mr. Treves, that the symptoms of the large number of nurses suffering from various illnesses pointed most distinctly to unsanitary conditions of some kind as existing in the hospital. Mr. Scarth went over the hospital, and prepared an excellent report on the sanitary condition of the hospital.

At the first meeting of a sub-committee appointed to report on the sanitary condition of the hospital, the members of the staff on the sub-committee laid very great stress on the cases of blood-poisoning in the form of pyæmia, and on the unhealthy conditions of wounds observed amongst the patients, which facts all pointed to unsanitary conditions existing in the hospital. The following motion was passed:—

That, having regard to the serious complaints respecting the sanitary state of the hospital, the committee is of opinion that a competent sanitary inspector should be requested to report thereon, and that such report should include inquiries into questions of drains, lavatories, and every sanitary detail connected with the hospital.

The sub-committee selected Mr. Louis C. Parkes, M.D., D.P.H.Lond.Univ., Assistant Professor of Hygiene at University College, London. Dr. Parkes having most generously offered to do the work without any fee, the committee decided that it would be much more satisfactory to give Dr. Parkes a fee in the form of an honorarium, and the work of inspection was then proceeded with. Mr. Plumbe, the architect of the new buildings, worked with Dr. Parkes in all matters, and on February 11 a most carefully prepared report, dealing exhaustively with the sanitary condition of the hospital, was sent in by Dr. Parkes, accompanied by plans prepared by Mr. Plumbe, showing the whole drainage system of the hospital.

The sub-committee then decided that Mr. Rowland Plumbe, F.R.I.B.A., should be asked to furnish approximate estimates of the cost of carrying out those suggestions of Dr. Parkes' report which the sub-committee consider to be absolutely urgent. These gentlemen sent in a detailed schedule of the work they considered necessary to be done.

The sub-committee give their most cordial thanks to Dr. Parkes and Mr. Plumbe, for the care and ability with which they have studied this difficult question of hospital sanitation; and it is satisfactory on all accounts to know that the recommendations of Dr. Parkes and Mr. Rowland Plumbe were unanimously adopted at a meeting of the House Committee of the hospital on March 18, and will be carried out in their integrity, at an outlay of £7,000.

HULL SANITARY ASSOCIATION.

AT the annual meeting of the Hull Sanitary Association, held in February, the Chair was occupied by His Grace the ARCHBISHOP OF YORK, and there were also present Mr. C. H. Wilson, M.P., Mr. F. B. Grotrian, M.P., the Mayor and Mayoress of Hull (Alderman Dr. and Mrs. Sherburn), the Sheriff (Councillor E. Robson), the Rev. Canon McCormick, D.D., Vicar of Hull, and a large number of representative and corporate men.

The ARCHBISHOP OF YORK pointed out that they did not want to oppress the owner of small house property who might have every advantage, but they could not give him the lives of the poor people. That was what was at stake at the present time. The question was whether to the many disadvantages under which the poor laboured, they would add this:—That they would allow

their houses to be made traps to catch their lives in; whether they would deprive them more or less of their only capital, namely, the strength of their bodies; whether they would have a nation reared in filthy dens, their constitutions spoiled before they were matured by diseases which were contracted there? This was too great a request to ask from any class, and the highest duty that a corporation could have was to preserve and protect the lives of the people just as the next was to protect their property. He put the lives first and the property next. Having alluded to the startling fact that the death-rate amongst children in 1889 was 158 per 1,000, whereas in healthy districts it was only 103 per 1,000, he said the corporation of Hull was serving them no doubt, but it might do so faster. He remarked, with admiration, that the Hull Sanitary Association had ventured to stand up to the corporation in the way it had done, and was pleased to see the corporation had behaved so generously in receiving it in the way it had done. The Archbishop concluded by moving the adoption of the report, an abridgement of which follows.

After a note of congratulation, to the effect that "The past year has been one of marked encouragement for the advocates of sanitary reform," and touching upon the increased interest taken in sanitation, the report remarks upon the steps taken by the Association in pointing out the probability of an outbreak of typhus fever at their last annual meeting, and which, to a great extent, they could now fairly claim the credit of having been the means of the public escaping, in consequence of the weight they brought to bear upon the Corporation officials. It thanked the press for the very liberal assistance always given, and proceeding to deal with certain unsanitary dwellings in the borough which they believed placed the public health in danger, and they believed were also totally opposed to the provisions of the Public Health and the Artisans' Dwellings Acts, it said, "The Association desire clearly to express their conviction that, from the point of view, either of public safety, justice to the people, or obedience to the statute law, the extent of reform projected, if regarded as anything more than an instalment, is altogether unworthy and inadequate, and should be extended boldly so as to deal with every unsanitary house in the borough." Reference was made to the conference held in Hull in July last year, to inquire into the then prevalent infant mortality, and which was likely to prove of very great benefit. The adoption of the Infectious Diseases Act, 1889, and the lectures delivered by the members of the Association, and attention of the corporation to the Trippett Street drainage, recommended by the borough engineer in 1883 and not yet accomplished, were also commented upon. It remarks with pleasure upon the enlightenment of the working-classes on the subject, and concludes by pointing out that "In advocating sanitary progress, the Association are in no opposition to the members of the corporation, but recognize them as those with whom the responsibility rests of conferring upon the inhabitants some of the greatest blessings which can be obtained from the enlightened self-interest of popular representative government."

Mr. C. H. WILSON, M.P., seconded the report, and in doing so eulogised the Artisans' Dwellings Company, which was a movement tending in the right direction. He believed that already £9,000 had been expended in the raising of dwellings on all modern and sanitary principles, and believed it would greatly benefit those for whom it was undertaken. He remarked, as the Association was carried on at the small outlay of £20 a year, it was a labour of love on the part of those who were responsible for it.

The MAYOR supported the motion by observing that the Sanitary Committee did its duty thoroughly and fearlessly, and ventured to assert that no town in Great Britain had progressed at the rate that Hull had done during the last ten years. He concluded by saying that the Association must not in his presence charge the Sanitary Committee with any undue delay, for he would not sit there and hear statements made which he knew were not facts.

Mr. F. B. GROTRIAN, M.P., moved a resolution commending the action of the corporation, which was seconded by the Rev. JAMES BELL, and carried unanimously.

Mr. NICHOLSON, having read the financial statement, showing their total indebtedness to be £5 5s. 8½d., he moved that the Hull Ladies Sanitary Association be affiliated with the Association, which was seconded by Mrs. PRIESTMAN, and carried.

The re-election of officers and votes of thanks concluded the proceedings.

SANITARY MATTERS IN GLASGOW.

(From our own Correspondent.)

Important dairy prosecution.

ANNIE MCGILVRAY, a purveyor of milk, has been brought before the sheriff charged with contravention of the 13th Regulation, made by the local authority on December 24, 1888, under the Dairies, Cow-sheds, and Milk-shops Order, 1885. This regulation was a supplementary one to the general one made by the local authority, and applied to all premises registered after February 1, 1889. It provides that:—"No milk-shop, milk-store, dairy, or place or premises where milk is kept stored, or exposed for sale, shall be in direct communication by door, window, or otherwise with a dwelling room or sleeping apartment." The two dairy inspectors of the Sanitary Department on calling found two men sleeping in the back apartment at 11.20 A.M., this back apartment being in communication with the milk-shop fronting the street. The agent for the accused, whilst admitting the facts of the case, addressed his lordship at considerable length, contending that the local authority had not the power to make such a regulation as the legislature had set forth in section 9 of the Privy Councils Order as to dairies, cow-sheds, and milk-shops, dated June 15, 1885, what they deemed sufficient for dealing with such cases, and for protecting the public from infectious disease. The agent for the prosecution, however, pointed out that under section 13 of the said Privy Council Order, the local authority was empowered to make regulations from time to time (*a*) for the inspection of cattle in dairies; (*b*) for prescribing and regulating the lighting, ventilation, cleansing, drainage, and water supply of dairies and cow-sheds in in the occupation of persons following the trade of cow-keepers or dairymen; (*c*) for securing the cleanliness of milk-stores, milk-shops, and of milk vessels used for containing milk for sale by such persons; and (*d*) for prescribing precautions to be taken by purveyors of milk, and persons selling milk by retail against infection or contamination. Under this latter head, and in virtue of its powers, the local authority had framed the regulation which the defendant was charged with contravening, and obtained the approval of the Board of Supervision to the same, as provided in section 14 of the Order. The sheriff repelled the objections, and witnesses were adduced to prove the charge. He found defendant guilty of the violation, but as she had closed the shop and stopped the sale of milk, he did not impose a penalty. This is the first case of the kind tried here under this regulation.

Adulteration of pepper.

A grocer named Helen Mulholland was charged before the sheriff with having sold to the food inspectors ¼ lb. of white pepper, which on analysis was found to contain 7 per cent. of extraneous starch. She pleaded guilty, making a statement that she sold it as purchased, not knowing that it was adulterated. A fine of £1 was imposed.

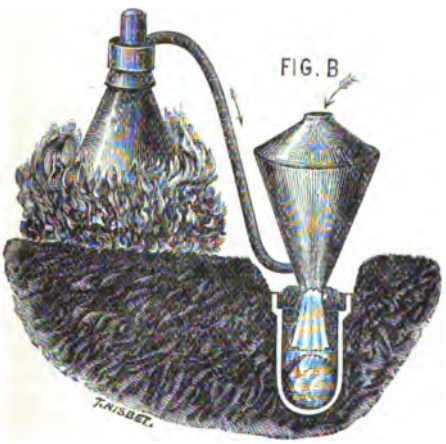
Clinical teaching at Belvidere Hospital.

Several conferences were lately held with the various teachers of the Glasgow medical schools, the Hospitals Committee, and Drs. Russell and Allan. An arrangement has now been come to by which Dr. Allan will continue to give clinical instruction free to all medical students, but that without withdrawing the

privilege granted by the magistrates and council to the professors of medicine in the various medical schools to take their students to Belvidere for the purpose of giving clinical teaching, such professors be earnestly requested to urge upon their students to take advantage of the instruction to be afforded by Dr. Allan and his assistants, and that if such professors wish at any time to demonstrate any infectious disease in the hospital, permission to do so should be granted by the physician superintendent, or the hospitals committee. It was agreed to forward a copy of the foregoing arrangements to the General Medical Council of Great Britain and Ireland, with a representation that in the opinion of the local authority no qualification in medicine ought to be registered which is granted without evidence of clinical instruction in infectious diseases.

Improved apparatus for testing drains and soil-pipes.

In the SANITARY RECORD of May 1888, p. 534, and of March 1889, p. 436, we fully described the new smoke-testing apparatus invented and patented by Messrs. Fyfe and Dobson of this city. The smoke was generated by waste and other simple combustibles, and forced by the water-pressure (from the nearest water-tap, and through a hose-pipe) into the drains, soil-pipe, &c., detecting any leakages or defects in the houses. To meet the case of those towns where the water supply is from cisterns only, or places where there are no convenient water-taps, the inventors have now adapted the apparatus for being wrought by steam instead of water-power. A small conical-shaped boiler, sufficient to supply steam for a test extending over three-quarters of an hour, is placed over a fire of coal, kindled at a place where the test is to be made. A pressure of 30 to 40 lbs. per square inch is obtained in about 10 minutes thereafter. We subjoin sketch of the machine at work.



The steam is conveyed to the apparatus, and thence to the drain, as already described in the SANITARY RECORD, by 6 feet of metal flexible tubing. The pressure obtained by the steam is very effective in inducing an inward current, and propelling the smoke through the drain and connections. The cost, including boiler, and 6 feet of flexible tubing, is £3 5s.

NOTES FROM THE NORTH.

(From our own Correspondent.)

A CASE of considerable interest to medical practitioners, and especially to those who employ assistants, was heard at the Hexham Petty Sessions before a numerous Bench of magistrates. The facts of the case were admitted on both sides, and the only question was whether the defendant had contravened the law by signing a certificate as to the death of a child whom he had not personally attended during illness. It was distinctly stated on behalf of the Bench, that in their opinion there was no intention on the part of the defendant to mislead or deceive. His assistant had filled up the certificate, and the defendant, without giving the matter a thought, inadvertently signed it. This was the view of the Bench, and they dismissed the case. Their decision, however, does not appear to have given universal satisfaction, and still leaves the question surrounded by technical difficulties, which the medical profession would, doubtless, be glad to see removed.

At a meeting at Newcastle, under the presidency of the Bishop of the Diocese, the Rev. Mr. Waugh, related some horrible cases of ill-treatment to children. He stated that infantile murder in England was the easiest and safest business in which anybody could engage. The Hindoo practice of throwing children to the crocodiles in the Ganges, or the killing and eating of their own offspring by savages, were merciful acts compared with the lingering deaths suffered by English neglected children. He would have the coroners obliged to report all questionable cases, so that the child might be represented by the National Society for the Prevention of Cruelty to Children.

Dr. Arthur Green has been appointed a district medical officer of Gateshead in place of his brother, recently deceased.

Dr. T. Wilson, medical officer of health for the Wallsend district, complained that there was at present no means provided for the isolation of patients suffering from infectious diseases, there being no hospital in the district. He could not understand why the Board hesitated to erect an infectious diseases hospital; in face of the recent fever epidemic, he did not think that such a project could be long deferred, or the results might be still more disastrous than any they had hitherto experienced.

Dr. Munro, medical officer for health at South Shields, reports an exceptionally large increase in the death-rate of that borough for the four weeks ending March 22, the number of deaths being equivalent to an annual death-rate of 26·2 per 1,000, compared with 19·2 exhibited in the corresponding month last year.

The Working Men's Dwellings Committee of the Durham Corporation have given notice to the owners of 43 houses to put their property into proper habitable condition, or, in default, proceedings will be taken against them.

At the last meeting of the Darlington Town Council the report of the medical officer of health for the past year was discussed. The death-rate for the year was only 17·1 in the thousand. The medical officer made several recommendations as to improvements in sanitary matters, more especially as to the condition of the back streets, the over-crowding of dairies and cowsheds, and the state of many uncovered ashpits. Councillor Manson called special attention to the necessity of purity of milk. The report was adopted by the Council.

We regret to have to announce the death of Dr. Rutherford, of Newcastle, which occurred somewhat suddenly on March 19. In addition to other numerous duties the deceased was always found in the van of all movements for sanitary reform in Newcastle during the past 40 years. Quite recently he was engaged in drawing up a report relative to the high death-rate of Newcastle and the over-crowding there. His funeral was witnessed by at least 100,000 persons, and his widow and family received many tokens of the sympathy of the public.

THE SANITARY COMPLAINTS AT MIDDLESBROUGH.

THE STATE OF THE MUNICIPAL BUILDINGS.

THE report of the Inspector sent down by the North-Eastern Sanitary Association to make a test of the sewers and inspection of the system arranged in connection with the Middlesbrough Municipal Buildings, regarding which serious complaints have been made, has been received and discussed by the Streets Committee of the County Council. The inspector states that the drainage was, on the whole, well arranged, but points out that one portion of

the outfall drains has a greater fall than another, the one, which is very flat, having become choked with solid matter. He describes the arrangement, and points out the defects.

Of the subsoil drains, he says those outside the buildings and within the quadrangle, of the latter place the most complaints being heard, had been satisfactorily dealt with, but he found a trapped chamber out of order, which allowed leakage, and unsealing the trap allowed sewer gas to escape into these drains. He concludes that from the defects revealed by the smoke test the drains could not have stood the water test, and this, consequently, was not applied. The connections of all soil-pipes were defective, and, in each case, two or three joints in the drain beyond this were leaking, some cases allowing percolation of sewage into the subsoil, whilst also allowing air therefrom to be drawn into the building through apertures in the wall, which had not been built up after the waste and soil-pipes had been fixed.

The defects at the soil-pipes are to be attributed partly to defective workmanship, and partly, no doubt, to subsidence, causing fracture of joints. The drains from prisoners' lavatory gully, parade w.c's, and large cell w.c. (south side) were found very defective, the joints being open, and without jointing material. The gully trap at Mr. Ashe's house and the gully trap for library lavatory (basement), were found broken, destroying the seal and allowing percolation into the foundations.

He mentions drains which, though not absolutely tight, may, as they rest on a bed of stiff clay, suffice for a time. The drain from the south wing must, he continues, be very defective at some point or points, as the smoke from the test, when applied to this drain, escaped very freely into the subsoil or clean water drains.

Another drain, from the w.c of the Guardians' offices, he mentions, must be completely choked up. The smells noticed by residents on the premises he attributes to the open spaces under the w.c seats. He deals with other points in connection with his investigation, and adds a series of recommendations.

Mr. G. G. Hoskins, the architect, also forwarded a long statement to the Committee, stating that he always believed that the system would not be found fault with. Whilst, however, he had been prepared to hear of subsidence, he was not prepared for bad workmanship, because the Clerk of the Works, under whose superintendence the drains were laid, is a man of known ability and long experience. Whatever blame, however, attaches to the Clerk, the contractor and his representatives must not go scathless. The contractor's reputation is seriously affected, and he should be held responsible for the defects which have been discovered. Mr. Hoskins proceeds to refer to the complaints made, and deals directly with many statements made in the inspector's report. Of the flat drain, he says its position is a direct violation of one of the clauses in the specification, which reads: "All drains running into this shaft (meaning the chamber), and the outlets from it, are to have as much fall or inclination as the depth of the new main sewers will allow." And this he enforces by a special instruction to the Clerk of the Works. The subsoil drains, he notes, were laid under the supervision of the borough surveyor. Of the defective connection of the soil-pipes and the drains from lavatories, w.c's, &c., he attributes this, with the inspector, partly to subsidence. Regarding the soil-pipes, he again quotes his instructions to the Clerk to the Works, and mentions, for the w.c's, &c., Stanford's patent joints were in use, and thus no jointing material was required. In confirmation, he quotes as authority Mr. E. C. Robins, F.S.A.

Mr. Hoskins proceeds carefully to pick up and answer the numerous complaints, and concludes by stating that the few preliminary points in connection with the drainage are entirely questions of professional opinion, and it was for the Committee to decide whether they thought it advisable to carry out the whole or any of the recommendations made by the inspector.

At a further meeting of the Streets Committee the report was again submitted and discussed. In addition, a reply from Mr. R. B. Duncan, Secretary of the North-Eastern Sanitary Association, in answer to Mr. Hoskins comments on their inspector's report, was submitted. Only two points need be mentioned. Mr. Duncan claims that the quadrangle chamber trap, to which both the inspector and Mr. Hoskins refers, is practically a cesspool, containing over 50 gallons of permanent sewage deposit. The drains found unconnected were, he points out, not fitted with Stanford's patent joints.

In the discussion on the reports Councillor W. L. Taylor asked regarding remedy against the contractor, but Alderman Fidler pointed out that he was paid on the certificate of the architect. Councillor Jones did not think much of the matter at all. Mr. Letham, the surveyor, said he had tested the subsoil drains, and, under pressure of water, they leaked a little. The whole quadrangle was, however, covered with a layer of concrete, and was completely watertight. He was satisfied the central chamber was satisfactorily trapped. The most serious mistake was in not taking advantage of the fall leading to the central chamber; but he thought the velocity caused by the fall from the shafts would prevent any serious effects.

After further discussion the matter dropped, without any action being taken.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

"Something attempted, something done."

ASTON MANOR (Population, 66,769).—Mr. Henry May's report for 1889 is very interesting, and his remarks on the events of the year have an exceptionally practical bearing. In spite of extremes of temperature and severe epidemics of scarlet fever and measles, the year was favourable to health, and the death-rate varied but little from those of the two preceding years, both of which were charactorized as healthy. The increase of 0·3 per 1,000 shown upon the rate of 1888 is accounted for by deaths from whooping-cough and diarrhœa, diseases which are as yet little amenable to control by a sanitary authority.

Hospital influence. Mr. May speaks most favourably of the influence of the hospital in checking the spread of scarlet fever, though the resources of the building were at one time severely taxed.

Popularity of hospitals. The increasing popularity of hospital isolation, independently of the insufficiency of the present building to cope with the recent epidemic, has shown the need of enlarged accommodation for future requirements; and in view of the fuller knowledge of the existence of cases which will follow the recent adoption of compulsory notification in the district, it has been wisely decided to erect another pavilion to accommodate twelve adult cases.

Measles and schools. The year's experience of measles showed that the reported cases were closely connected with three or four public elementary schools. There was less than the usual number of scattered cases of typhoid fever. Owing to the comparatively modern character of this district, it contains as yet but very few old dilapidated dwellings.

Dwellings. and hence no need has arisen for the health officer to report under the Artisans' Dwellings Acts that any houses are in a state dangerous to health and unfit for human habitation, with a view to their demolition.

Over-crowding. As a result of the great abundance of small houses for the working classes, cases of over-crowding are very rare, and in these respects this district is extremely fortunate. The sanitary defects of the dwellings are very numerous and very various, and would soon, if neglected, render the houses unfit for habitation; but they are of a class which have hitherto been, and are still, satisfactorily dealt with under the Nuisance Clauses of the Public

Water-closets. Abolition of middens.

Health Act. Good work has been done in the gradual adoption of the water-closet system in new dwellings of late years, and thousands of old middens have been altered under notices. Mr. May submits plans of a model automatic flushing-closet which has been applied to a new block of houses and has worked well. The arrangement consists in erecting the closet seat over the drain, which has a depression holding water to receive the excrement, and forms a trap. It is flushed by the ordinary drainage, supplemented by an automatic flushing cistern supplied from the public service.

BARTON REGIS RURAL (Population, 12,040).—Although reporting an increase in the death-rate during 1889, Dr. Edward Crossman sees no reason for dissatisfaction with the sanitary condition of his district. He explains that the excessive mortality was caused by those diseases least under control, measles, whooping-cough, and croup. A regrettable feature of the returns is the large number of deaths of children under five years of age. The report treats of various nuisances dealt with, and many improvements made in the water supply, and it discusses at some length the bearing of the provisions of the Infectious Disease (Notification) Act in relation to the needs of the district. Dr. Crossman thinks it is to be regretted that the official certificate supplied to medical men under this Act does not provide for the age of the patient being mentioned. This is a serious omission, and one which we hope that the central authority will see their way to rectifying before long. In a short time there will be a mass of information accumulated throughout the country as to the prevalence and localization of certain diseases, but without information as to the age distribution of the cases the statistics will have lost part of their great value.

High infant mortality. Compulsory notification. Defects in notification certificate.

CHELTENHAM (Population, 47,200).—Mr. Sampson Roch discusses many little points of interest in his annual report for 1889, his aim being chiefly to bring about such improvements as shall enhance the attractions of the town as a health resort. The sanitation of schools and of cottage property, the removal of refuse from ash-bins, &c., are some of the subjects he refers to, suggesting various amendments; while he pleads for additional officers in order to maintain a more perfect supervision of the district. The adoption of the Corporation water supply is an improvement which progresses steadily. Of twenty-three cases of enteric fever, fourteen were traced to polluted well-water, and the landlords were in each case called upon to remedy the evil. Two hundred and thirty-five houses had the Corporation supply laid on during the year at the instigation of the sanitary authority, which, added to the number (416) in 1888, gives a total of 651 houses using the public supply. Mr. Roch reiterates his arguments as to the advantages of cone-bearing trees over the deciduous ones, and urges that wherever the existing trees become overgrown or damaged by age or other causes, they should be replaced by some of the coniferæ. A very important question is that of making some provision for the isolation of diphtheria patients, the wards of the Delancy Hospital having been closed against them. The health officer fully approves this decision, he being of opinion that the two diseases, diphtheria and scarlatina, should never be brought into contact, or associated, but he suggests alternative schemes for the consideration of the authority by which some portion of the small-pox hospital, now long empty, should be brought into requisition, and thus rendered of greater service to the public. The number of deaths during 1889 was 733, or a death-rate of 15·52 per 1,000. The death-rate from the seven principal zymotic diseases was 0·46 per 1,000.

Water supply. Tree-planting. Isolation of diphtheria. Diphtheria and scarlet fever.

HARWICH (Population, 9,284).—The dangers arising from the use of private wells of doubtful purity are exemplified in Dr. W. W. Hardwicke's annual report for 1889. An epidemic of typhoid fever was traced directly to contaminated drinking water, and 2 deaths ensued. The borough possesses a good water supply, but, as the medical officer of health justly points out, it cannot be of any benefit unless laid on for the use of tenants. He therefore urges the closing of all doubtful private wells, and the substitution of the company's supply. Dr. Hardwicke also calls attention to the need for increased and improved ventilation of the sewers, and urges the abolition of unwholesome privies. The death-rate for the year showed a marked increase. In 1888 it was 10·7 per 1,000, whereas in 1889 it was 13·6 per 1,000. The mean rate for the previous seven years was 12·0 per 1,000. During last year there were no deaths recorded from small-pox, measles, scarlet fever, or diphtheria.

Wells condemned. Sewer ventilation.

KEYNSHAM RURAL (Population, 28,438).—Mr. John C. Heaven is not able to report any material improvements in his district during 1889, though several important points have been under consideration, and some matters are already in progress. He considers that the sanitary condition of the district is by no means satisfactory, and very sweeping reforms would seem to be necessary to bring about an amendment. There is urgent need of a proper system of sewerage and drainage for the more populous localities, with the substitution of some form of dry closet for the existing cesspit privies in the rural parts. Some better method of disposing of house refuse and manure is also desirable. Some advance was made in the provision of water supply to various parts of the district, and steps have been taken to deal with infected bedding by ordering one of Messrs. Goddard & Massey's portable steam disinfectors. There is, however, no infectious hospital accommodation, and it must therefore be considered fortunate that no serious epidemic of any kind occurred during the year. There were 18 cases of typhoid fever, mostly scattered over the district, but too frequently they were associated with conditions favourable to the spread of that disease. The death-rate for the year was 16·3 per 1,000. It is to be hoped that the rural sanitary authority will give to Mr. Heaven's report the consideration which it deserves, and that the care which he has evidently taken in its preparation will not have been thrown away.

Sewerage. Water supply. Hospital needed.

STROUD URBAN AND RURAL (Population, 9,680, and 28,341).—The improvements which are gradually being effected in these districts have not been without good results, and have decidedly influenced the public health. This is shown by the decreasing death-rates, which during the three quinquennial periods of Mr. Thomas Partridge's experience of these districts have moved steadily downwards from 21·5 (urban) and 18·2 (rural) in the first period, to 15·4 (urban) and 15·8 (rural) in the last. The infantile and zymotic death-rates have also diminished, though not to the same extent. Both in 1888 and in 1889 the rates were extremely favourable, 13 and 13·4 in the town, and 15·4 and 13·7 in the country district. There are many directions in which work is still needed, and Mr. Partridge persistently brings them under the notice of his authorities. He specially urges the need of means of isolation for first cases of infectious diseases, and some system of notification, and remarks that several cases have occurred on business premises where articles liable to retain infection were exposed for sale to the public. The drainage of the town is defective, and the water supply, though pure, not quite adequate to the public need.

Decreasing death-rates. Drainage. Water.

TORQUAY (Population, 25,000).—The sanitary history of Torquay during 1889 practically amounts to twelve

Usefulness of notification.

months' working of the clause in the Torquay Harbour Act requiring the compulsory notification of infectious diseases. Mr. Paul Q. Karkeek's experience convinces him of the great value of this instrument in the struggle between sanitation and disease. Many times during the year was there occasion for thankfulness for the early knowledge of the existence of disease obtained by this measure, for in several instances the patient, within two hours, was on the road to the sanitorium, with the result that no more cases arose in the particular houses. Altogether, 47 notifications were made—14 of enteric fever, and 33 of scarlatina. Of 370 total deaths, only 8 were from preventible diseases, or a rate of ·32 per 1,000 inhabitants, so that Torquay can continue to claim the reputation of having the lowest zymotic death-rate of any seaside health resort in the kingdom. Mr. Karkeek is well satisfied with the general sanitary condition of the town.

Dangers of shallow wells.

Some cases of enteric fever served to illustrate the danger of wells in a town permeated by drains. The cases were traced to polluted water from a well hitherto celebrated for its coolness, brightness, and freshness. It had been used for years, and was preferred to the town supply for drinking purposes. A drain in its vicinity, however, becoming choked, an overflow of sewage took place into it, and four cases of fever resulted. The well was accordingly closed.

Walsall (Population, 68,857).—There is very little matter for comment in Dr. Scott Wilson's report for 1889, but he gives a very satisfactory account of the sanitary condition of the borough, and makes some practical suggestions for further improvement. A slight increase in the mortality during the year is reported, the rate being 19·3 per 1,000 in 1889 as compared with 18·2 per 1,000 in 1888. This increase was

Diarrhœa.

caused by an excess of deaths from diarrhœa in the third quarter of the year, and by an exceptional mortality from diseases of the respiratory organs. The zymotic rate was, however, very low for Walsall, only 2·7 per 1,000.

ILLUSTRATED SANITARY PATENTS.

2,537. (1889.) A New Disinfectant and Deodorizer. Alfred John Shilton, Reading, Berks. [4d.]

The invention consists of a preparation of iodine in solution. The iodine is dissolved by means of an alkaline iodide (or any soluble iodide) in water. A solution can thus be made of any required strength, and will be extremely powerful both as a disinfectant and deodorizer. Other salts will increase the solubility of iodine, and may be used in the preparation of the fluid.

The proportions in which the ingredients are mixed is as follows:—

1 oz. iodine.
2 ,, potassium iodide.
1 gallon water.

The other salts referred to are soluble chlorides and bromides, particularly those of the alkaline metals and ammonia.

Claim.—The use of iodine dissolved in a soluble iodide for disinfecting and analogous purposes.

2,868. (1889.) A Portable Bath chiefly applicable for Medical Purposes. Josiah Webber, Trafalgar Lodge, George Place, Hyde Vale, Greenwich, S.W. [1s. 1d.]

The subject of this invention is a portable bath by means of which hot and cold air, hot and cold water, electricity, oxygen ozone, medicated vapours, &c., may be administered under entirely new conditions, including special arrangements for medical supervision and control.

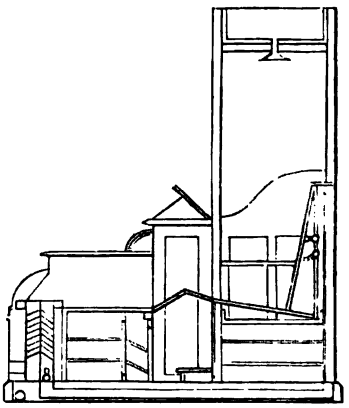
It consists of a chamber composed of wood, metal, or other suitable material constructed with double walls for the passage of the heated air. There is a cistern in the canopy by means of which hot or cold water may be applied while the bather is surrounded by the heated air. There is an arrangement for the application of heat and cold to the spinal centres with a special apparatus for local treatment to the eye, throat, or ear.

The lower part of the bath consists of two chambers, one for airing linen, and the other for the treatment of infected clothing. The furnace is heated by gas, oil, or spirit.

For the hot-air supply a furnace or heating chamber is constructed at one end of the bath, through which fresh air, after being purified by passing it through perforated zinc trays filled one with wool and the other with charcoal, becomes heated to an unusually high temperature, and is then projected on to the body of the bather. The hot air is then drawn off through the spaces between the hollow walls of the bath casing, and carried to the furnace direct where it mingles with the products of combustion, and is discharged by the same flue.

Attached to the heating are appliances for the reception of chemicals for the generation of medicated vapours of oxygen or other gases, so that while the body is enveloped in a medicated atmosphere for external treatment, a differently charged atmosphere for internal treatment may at the same time be administered through the organs of respiration.

Cold air is applied by means of pipes running through an ice chamber, its application to the bather being under control. And electricity is applied in the usual way, but under more favourable conditions.



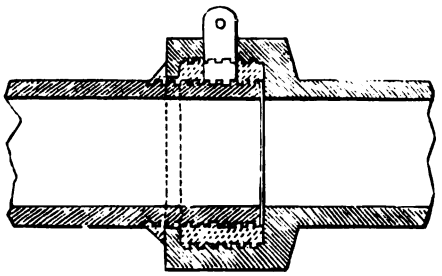
The figure represents a section through the apparatus, and for the detailed action of the various parts we must refer the reader to the specification quoted above.

5,790. (1889.) An Improvement in Drain-pipe Joints. William Samuel Emden, 10, Beaufort Buildings, Strand. [6d.]

This invention relates to the joining of earthenware pipes and the like, such as are used for drainage and similar purposes. And its object is to protect from disintegration the cement which is placed between the spigot and socket. In the ordinary form of joint the cement remains exposed over its whole annular area at the mouth of the socket, and is thus exposed to destructive agents from without. In order to obviate this objection the socket is made, according to this invention, with an inwardly projecting lip at its mouth, which lip nearly fits the outer periphery of the inserted pipe—or a collar is formed on the spigot end of the pipe which nearly fits the internal periphery of the socket at its mouth—thus practically closing the mouth of the annular space which contains the cement, as shown in the figure, which is an example of the lip placed on the socket.

In order to make the joint, a hole is formed in the socket, and a blade is inserted in the same, dividing it

into two halves; into one half liquid cement is poured, and the air within the socket passes around, and escapes on the other side of the blade until the cement has come

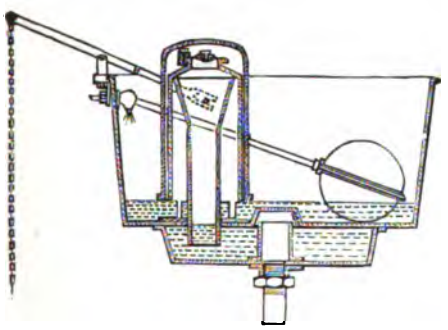


around to the blade from the other side—the blade is then withdrawn and the joint complete. There are some slight variations and modifications of this invention, and it is capable of application to any other forms of pipe jointing other than drain-pipes.

Claim.—The inwardly projecting lip on the socket or spigot for the purpose of nearly closing the annular space as described and illustrated in the specification quoted above.

5,835. (1889.) IMPROVEMENTS IN FLUSHING APPARATUS OF WATER-CLOSETS. JOHN SHANKS, Tubal Foundry, Barrhead, Renfrew, N.B. [8d.]

The object of this invention is to improve the construction and action of flushing apparatus, so as to obtain a more reliable supply of water and a better scouring action in the closet basin.



The cistern, as shown in the fig., is made with a well or depressed part down into which the syphonal parts extend. A horizontal partition forms the lower part into a shallow compartment, and upon this partition is fixed a central pipe with its bottom end projecting down below the partition, and with its upper end, which is funnel-shaped, extending to a height above the level of the water in the cistern when full. The top of the pipe from the cistern to the w.c. projects up into the well compartment, its top edge being a little higher than the bottom edge of the central syphon-pipe.

The well compartment thus acts as a water-trap, and its area is so much in excess of that of the down-let pipe that the syphon action cannot clear it out, but always leaves enough water to seal the bottom of the central pipe.

The syphon-pipe is covered by a stationary bell or inverted cup, with openings at its bottom so that the water of the cistern can pass freely between it and the syphon-pipe when the syphon action takes place.

Covering the stationary bell there is an outer movable bell which is raised be means of a forked lever acting on pins on opposite sides of the bell; when the closet handle is drawn this outer bell having its sides internally a very little larger than the outside of the stationary bell.

In the top of the inner stationary bell there is an air valve which opens upwards when the outer bell is raised, this movement of the outer bell drawing the air through the valve from the inner bell and thereby causing the water to rise in the inner bell and start the syphonal action.

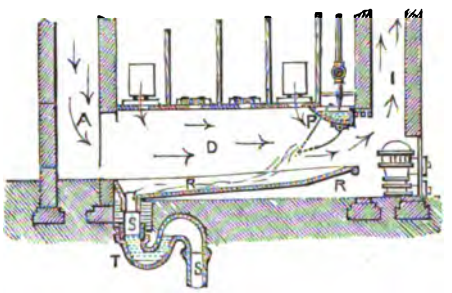
Greater scouring action and flush is provided to the closet pan by means of a pocket or chamber placed contiguous to the pan. The pocket extends from the supply nozzle up to the top of the closet basin, and there communicates with a fan or spreader, or continuous open bottom rim. The main scouring action takes place through a horizontal slit or row of holes formed through the basin shell directly in front of the supply nozzle.

Some slight variations of this design we have not space to particularly describe.

Claim.—The construction of the cistern and the method of supplying the water to the closet basin, as described in the specification above quoted.

19,900. (1889.) IMPROVEMENTS IN OR RELATING TO DRY CLOSETS. WILLIAM PHILLIPS THOMPSON, F.C.S., M.I.M.E., 323, High Holborn, E.C. [6d.]

This invention relates to improvements in dry closets as shown in the figure. The figure represents a longitudinal vertical section of the Smead dry closet. In this



D indicates the vault of the dry closet with seats over it in the usual manner. A is the foul-air room, and I the vent-flue, the air being drawn through the vault and out through the vent-flue, as indicated by the arrows.

As these closets were heretofore constructed and used the fæcal matter was deposited in the vault D, where it was desiccated by the air drawn through the vault; the dried residue of such matter being burned in the vault or removed and carried away as might be preferred; the usual practice at the present day being to burn it in the vault.

The present invention consists in combining with a dry closet of the kind above-mentioned means for either washing away the deposits at frequent intervals, or for washing it out at the end of the season, or from time to time as may be preferred. To enable this to be done the dry closet is constructed in the usual way, except that instead of an absorbent transverse partition or floor for the reception of the deposits in the vault, a tight partition or floor R is now provided which is set inclined as shown, and has its lower end connected with a pipe S leading to a sewer, and which pipe is provided with a suitable running trap T, as shown.

The floor R may be made of any suitable material; and it preferably inclines towards the direction in which the air enters, so that the air may be brought more directly in contact with the deposit on the floor.

In the upper part of the vault D at a point just over the upper end of the inclined floor is placed a tilting pan or receptacle P, which is constructed so as to act automatically at any desired periods, or any ordinary form of flushing tank may be used, the object always being to automatically empty its contents upon the inclined floor and thereby wash the deposits into the sewer pipe S. Or such flushing arrangement may be under the control of the janitor or person in charge of the closets.

It will, of course, be understood that the main feature of this style of dry closet, which is the large and continuous current of air through the vault, is not to be

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dispensed with, but will be used in conjunction with the flushing arrangement described above.

Claim.—The system of flushing dry closets with water, as described in the specification quoted, with the various features described and illustrated therein.

LIST OF APPLICATIONS FOR PATENTS

RELATING TO SANITATION.

From March 4 to March 27, 1890.

[*This List is specially compiled for the* Sanitary Record *by Messrs. Rayner & Cassell, Patent Agents, 37, Chancery Lane, Holborn, from whom all further information relating to Patents may be had on application, gratuitously.*]

March 4.—No. 3,418. John Dean, 8, Quality Court, London. Improvements in and connected with water-closets.

No. 3,421. William Henry Swingler, Cobden Buildings, Corporation Street, Birmingham. An improved combined dust pan and cinder sifter.

No. 3,452. Henry Harris Lake, 45, Southampton Buildings, London. Improvements relating to rolls of paper for toilet and other purposes. (Seth Wheeler, United States.)

March 5.—No. 3,503. Miles Williams, 86, Queen's Road, Bootle, Liverpool. Improvements in the manufacture of soft soap.

No. 3,540. William Edward Taylor, 97, Newgate Street, London. An automatic apparatus for softening and filtering water.

No. 3,592. Charles Darrah, 8, Quality Court, London. Improvements in water waste preventing cisterns for supplying water-closets, urinals, and for other analogous purposes.

March 6.—No. 3,600. Gustav Priester, 323, High Holborn. Improved apparatus for flushing sewers and the like.

No. 3,629. Charles Darrah, 8, Quality Court, London. Improvements in or applicable to pedestal water-closets.

March 8.—No. 3,722. Wilhelm Wittorf, 45, Southampton Buildings, London. Improvements in and relating to flushing apparatus for water-closets.

No. 3,734. Oscar Elphick, 24, Southampton Buildings, London. Improvements in water-closets, suitable for railway carriages.

March 11.—No. 3,795. Wilhelm Schulthess, New Bridge Street, Strangeways, Manchester. Improved corset.

[Date applied for under Patents Act, 1883, sect. 103. September 12, 1889, being date of application in Switzerland.]

No. 3,807. Richard Whitaker, 23, Providence Street, Sudell Street, Rochdale Road, Manchester. An improved "clothes washer."

March 12.—No. 3,890. Charles Frederick Courtney and Frederick Young Robinson, 19, Southampton Buildings. New or improved means for washing clothes and like articles.

March 15.—No. 4,080. James Archer, 6, Bank Street, Manchester. Improvements in apparatus from which the contents are discharged at stated periods for rinsing or flushing purposes, partly applicable to other flushing apparatus.

No. 4,083. George Lawrence and Arthur Cowper Raynard, 18, Buckingham Street, Strand. Improvements in and relating to coverings for closet seats.

March 17.—No. 4,151. Frank Pullen Candy, 7, Staple Inn, Middlesex. Improvements in the manufacture of materials for use in the purification and clarification and discolouration of water and sewage and other liquids, and for other uses.

March 19.—No. 4,273. James Duckett & Alfred Duckett, 8, Quality Court, London. Improvements in and relating to water-closets.

March 22.—No. 4,487. William Snelgrove, 13, Temple Street, Birmingham. Improvements in the method of jointing rods for drain cleaning apparatus, and for like purposes.

March 24.—No. 4,579. Arthur James Harris, 70, Chancery Lane, London. Improvements in drain and other sanitary pipes.

March 27.—No. 4,835. Robert Brewster, 21, Cockspur Street, London. Improvements in the treatment of sewage.

SPECIFICATIONS PUBLISHED.—1889.

5,753. Jagger & Ors. Purifying sewage, &c. 6d.
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The above Specifications may be had from Messrs. Rayner & Cassell, Patent Agents, 37, Chancery Lane, at the prices quoted.

LAW REPORTS.

WESTERN CIRCUIT.—March 15th.

Archibald *v.* Fisher.

This cause was heard before Mr. Justice Cave and a special jury. Mr. Thorne appeared for the plaintiff; Mr. Bucknill, Q.C., and Mr. J. Alderson Foote for the defendant. The action was brought by a workman living in a cottage at Tiverton against his landlady for damages owing to the negligence of the latter in repairing some drains used for taking off sewage from the premises. The defendant owned certain cottages, in one of which the plaintiff and his family lived. In 1887 there had been an outbreak of disease at these cottages, which led to investigations, which resulted in its being found that the water in the well from which the water supply of the cottages was derived was poisonous, and the well itself contaminated with sewage. The plaintiff's case was that on that occasion, although the defendant's agents had certain repairs done, those repairs were insufficient to prevent a recurrence of the nuisance, and that an altered system of drainage ought to have been adopted. In 1888 typhoid fever broke out in the cottages, and the plaintiff and his family were seized with it; one of his children died from it, and he himself was thrown out of work for a considerable time, being put to expense for medical attendance. One of the drains was found choked up, and the sewage going into the well. The well was condemned by the borough medical officer and was closed, the town water being laid on to the cottages. In short, the defendant did everything she was required to do by the borough authorities. In the result the jury found a verdict for the plaintiff, with £50 damages. Judgment accordingly, and execution was stayed if £150 was brought into court and notice of appeal given within a week.

Water Rates.

The Sevenoaks Town Waterworks Company brought an action in the county court against a person named Gillett for water rates amounting to £1 8s. 4d. It was stated that the defendant rented a house under an agreement with his landlord to pay a rental which included the water rates. His landlord, however, had become a bankrupt. The judge (Mr. Homersham Cox) said it was a very important matter for water companies. The solicitor for the company (Mr. Warner) read the Act under which the company was incorporated, which was to the effect that the rates were recoverable from the person using the water. The judge said it was very hard for the defendant, but the law was clearly against him. Having had a supply of water he must pay for it. Defendant said he had already paid the water rates, which were included in his rent to the landlord. The judge thought the company should not ask for costs. Costs were then not applied for, and the judge gave a verdict in favour of the company, without costs.

QUEEN'S BENCH DIVISION.—Mar. 26.

(*Before* Lord Coleridge, *and* Lord Esher.)

Roberts, appellant—Richards, respondent.

This was an appeal on a case stated by justices of Merionethshire, raising a question as to a bye-law of a local board as to the width of new streets. Richards was charged by Roberts, surveyor of the Dolgelly Local Board, for that he had made a new street there without making it at least 30 feet in width, in breach of a bye-law which required it to be so. It was disputed that it was not a new street, and that the bye-law was unreasonable. The bye-law, made and allowed

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under the Public Health Act, 1875, required that every person who shall lay out a new street intended for use as a carriage road shall so lay it out that the width shall be 30 feet at least, and that every one who shall construct a new street which shall exceed 100 feet in length shall construct it for use as a carriage road. In August, 1875, a sale of land by auction took place at Dolgelly, and houses were five years afterwards, in 1880, erected on some of the lots. Other lots were not then sold, but the land was in 1878 for the first time fenced out by hurdles put up by the freeholders as temporary fences to show the lots, and the fences were up for about two years, when the owners took them down. In June, 1880, Richards purchased the freehold of the land opposite those houses, except the land opposite the houses comprising a "back road" 7 feet wide. There was open land at the time of the bye-law opposite the houses without wall or fence. but Richards afterwards—prior to August 1889—erected on the land a wall 170 feet long and within 7 feet of the front wall of the houses previously erected, and facing the road in front of the houses, thus reducing the width of the roadway to 7 feet. The roadway is not a highway repairable by the public at large. The justices found as a fact that the erection put up by Richards formed a new street, and that he was guilty of a breach of the bye-law. They also found and determined, having regard to their own knowledge of the width of streets in general in Dolgelly, that the bye-law was unreasonable, and so they dismissed the complaint, stating a case on the question whether the bye-law was reasonable. The surveyor appealed.

Mr. Ellis (with Mr. E. Harrison) argued the case on his behalf, and contended that there was nothing to show the bye-law unreasonable, and that it was a case of a "new street" 100 feet in length within the bye-law.

Mr. Gore argued on the part of Richards, the owner, that he was not liable under the bye-law, first because it was unreasonable, and next because it was not a new street.

Lord Coleridge, in giving judgment, said no doubt it was a strong bye-law, and one to which objection might not unreasonably be made, and perhaps in particular cases it might be unnecessary, and included particulars which might have been excluded, and, indeed, he rather thought it was so. But the question was whether it was so unreasonable as to be invalid and illegal. It was not a question whether the judges would have made such a bye-law and in such terms, but whether or not it was so unreasonable as to be illegal. These bye-laws were made by the local board, an elective body, and were sanctioned by the Local Government Board, and it must be something strong to induce the court to hold that a bye-law so made and so allowed was unreasonable and illegal. He could not hold that it was so in this case, and therefore, as the case appeared to come within it, the decision of the justices was wrong.

Lord Esher concurred. He thought it clear, he said, that the respondent had constructed the street, and that it was a "new street" within the bye-law. Then as to whether the bye-law was unreasonable and illegal, it was impossible to give a general definition of what was reasonable or unreasonable. If a bye-law consisted of something obviously unnecessary for the object for which it was made, that might be unreasonable. But it was not so in this case, and the bye-law was not so much out of all measure as to be unreasonable. The great point was that a person who made a place into a street must lay out the road in a particular way, and that it was unreasonable that the burden should be cast upon him without providing for contribution from the person who had already built. But that was not unreasonable, for why should the man who had done only what he had a a right to do be made to pay for that which the other party did, and which he need not have done unless he liked? The bye-law was not, therefore, unreasonable.

Appeal allowed.

MIDLAND CIRCUIT.—March 29.

Shaw *v.* the Solihull Rural Sanitary Authority

This case was heard at Birmingham before Mr. Baron Huddleston. Mr. Stanbury Eardley was for the plaintiff, and Mr. Alfred Young and Mr. Vachell for the defendants. It was an action of trepass brought against the sanitary authority for the demolition of certain buildings erected by the plaintiff, and the question involved was whether the defendants had exercised duly the powers given to them by the Public Health Act and their own bye-laws. By one of these last it was provided that the board surveyor might call upon the builder of any new structure to make good defective work. The aggrieved party might within fourteen days appeal to the authority, who should then invite him by a seven days' notice to appear before them and show good grounds against the order. The authority, if they dismissed the appeal, were to communicate the result in writing to the appellant, and then, if he did not comply with the surveyor's requirements, the authority might carry out the work themselves. The plaintiff was engaged in building some cottages, and in the opinion of the surveyor used mortar of an altogether improper kind. He was accordingly served with notice to pull them down. In answer he said he was prepared to defend his buildings before the authority, and inquired when the next meeting would be. He was told that it would be in two days' time. He accordingly attended, and his version of the proceedings was that he produced some specimens of the mortar used by him, but that the members present declined to look at them, saying that they were not practical men and must be guided by the opinion of their surveyor. He then asked for an adjournment in order to produce evidence, but this was refused, and he was told that the authority would be satisfied with nothing short of his pulling down the buildings. He then left, and subsequently received a notice in writing that his appeal was dismissed. According to the evidence on the other side, his specimens of mortar were passed round and examined; he was allowed to say what he liked; the surveyor also was heard; the room was then cleared, and, after deliberation, the authority informed him that they supported the decision of the surveyor. The plaintiff not having complied with what was required of him, the buildings were pulled down by the direction of the authority. This was the trespass complained of. For the plaintiff two points were made. It was said, in the first place, that he had no notice in writing seven days before the meeting in accordance with the bye-laws, and in the second that there had been no genuine hearing of the appeal or independent exercise of the judgment of the authority. As to the first point, Mr. Baron Huddleston held that it was competent to the plaintiff to waive the notice, and that he had done so. As to the second he said that, if the plaintiff's story were true, no doubt there had been no hearing of the appeal in the proper sense of the term. On this point, however, he believed the evidence of the defendants, and thought that there had been an honest exercise of the discretion intrusted to them. Whether they were right or wrong was immaterial, provided they had only heard and determined the appeal. He therefore decided in favour of the defendants.

Baby Farming.

At the Liverpool Assizes, Mr. Justice Mathew presiding, in the Crown Court, William Pearson, 51, labourer, and Elizabeth Pearson, 38, his wife, were convicted of the manslaughter of May Oldfield, at Birkdale, Southport, on November 16 last. His lordship, addressing the prisoners, said they had been convicted upon the clearest evidence of having caused the death of the child May Oldfield by the grossest neglect. They were further proved to have been guilty by their own admissions of seeking to involve in their crime Mrs. Brade, and they charged her with having instigated them to kill her children. Fortunately the law saved her from being involved in the consequences of their statement against

her. What they said was no evidence against her, but it was fatal to them. They had ample means given to them to maintain those children. William Pearson was once a respectable man, earning an honest living, but he allowed himself to be tempted by the money paid to him regularly by the mother, and to be led into habits of drinking. The consequence was the children were neglected and left without food and without proper treatment, and when they were seized with illness he and his wife left them to die. Drunkenness was no excuse in such a case, and he must sentence each of them to a severe punishment. William Pearson he sentenced to several years' penal servitude, and Elizabeth Pearson to five years' penal servitude.

POLICE COURT CASES.

FOOD AND DRUGS ACT, 1875.

At Marylebone William Mack, of 5, William Street, Hampstead Road, was fined £7 with costs for selling milk adulterated with 18 per cent. of water.—William Gilbey, of 5, Seaton Street, £5 with costs for selling milk deprived of the butter-fat to the extent of 40 per cent.—Albert Stone, of 38, Robert Street, for selling milk diluted with 7 per cent. of water and deficient in butter-fat to the extent of 23 per cent., was fined £7 with costs.—Charles Steeper, of 47, Osnaburgh Street, was summoned for selling butter mixed with foreign fats to the extent of 73 per cent. The defence was that it was sold by inadvertence. A fine of £5 with the costs was inflicted.

At Worship Street, the Farmers' Direct Supply Company, of Forrester Street, Mile End, was charged on a summons with selling, to the prejudice of the purchaser, milk from which a large percentage of cream had been abstracted. Mr. Bedford defended. The prosecution was conducted by Mr. Lapworth, sanitary inspector of Bethnal Green parish, whose evidence and that of his assistants showed that the company vended milk about the streets, and that a sample of the milk, which was purchased in Cudworth Street and submitted to a public analyst, was pronounced to be deficient of 50 per cent. of its natural cream, "one-half of the cream having been abstracted." Mr. Bedford said there was nothing to show that the cream had been abstracted. He cross-examined the witnesses to show that in winter the cows, from the difference of feeding, gave less cream. Mr. Lapworth said the secret of the matter was that the company purchased separated milk, and, by its mixture with new milk, sold the whole as unskimmed. The magistrate (Mr. Montagu Williams, Q.C.) said that the handbill before him, issued by the defendant company, appealed to the public not to pay more than 2½d. per quart for their milk, because the company would deliver it to the public pure as from the cow "with all its cream" at 2½d. per quart. Mr. Lapworth said separated milk was the secret of it. Mr. Williams: then the company "doth protest too much, methinks." Mr. Burrows, dairyman and cowkeeper, said that that morning he had seen 13 churns of milk, containing 23 gallons each, all consigned to the defendant company at Liverpool Street Station, and they were consigned as "separated milk." The milk was sent from Norwich, where there was a butter factory. Farmers sent their whole milk to the factory, where, by a separator, the cream was extracted, and the skim milk was then forwarded to London, where it had become a common practice to mix it with a certain quantity of new or unskimmed milk. The mass was of course deficient in cream. Mr. Bedford called William Brown, manager to the company, who said the milk sold was new milk, and if deficient in cream it was due to the fact that the bottom of the can had been reached, the cream having been sold off with the first sales. The magistrate said that it had been remarked that coal was steeped in fraud from the mine to the cellar. Milk was perhaps not quite as bad, but there seemed a good deal of trickery with it in its progress from the cow to the milk pot. The revelations of the milk trade could not be too widely known in London. This was not a bad case, and the company would be fined 10s. and 2s. costs.

The Farmers' Direct Supply Association were again summoned at Worship Street, before Mr. Bushby for having on March 9 sold milk from which a portion of the cream had been abstracted. Mr. Young, solicitor, of Arbour Square, defended. The evidence of Sanitary Inspector Weston, Bethnal Green parish, showed that on the morning of the day in question he had milk purchased from two different trolleys in charge of men belonging to the company vending milk about the streets. The certificate of the analyst showed that the first sample had been deprived of 60 per cent. of its cream, and the second sample to the extent of 33 per cent. of its cream, being also adulterated to the extent of 10 per cent. with water. Mr. Weston reminded the Court that this company had recently appeared before Mr. Williams, when it was shown that they purchased "separated" milk—that is, milk had been deprived of all its cream by machinery—from a Norwich butter factory, and it was suggested that this was the article vended after a quantity of new milk had been added, though the mass was, of course, below milk standard. Mr. Bushby said there was no defence to the matter, and the sanitary inspector by his proceedings was acting in accordance with his duty. He fined the company on the first summons £15 and costs, on the second summons £5 and costs, and on the third summons £2 and costs—£22 6s.

ADULTERATED MILK AT THE FOUNDLING HOSPITAL.

John Lane, of the Manor Farm, Highgate, was summoned at Clerkenwell Police Court for selling milk with 16 per cent. of added water. From the evidence it appeared that the defendant was milk contractor to the Foundling Hospital, where he served 53 gallons per day, at 8¾d. per gallon. The milk was tested daily by the steward, with the result that the sanitary inspector of the district was called upon to take samples of the milk for the public analyst, and he certified the milk to be adulterated to the extent of 16 per cent. of added water. For the defence it was stated that owing to the large number of big contracts held by the defendant it was necessary for him to have milk from other farmers in addition to the supply yielded by 200 cows kept by the defendant himself. The milk supplied to the hospital on the day in question (January 27) was milk from another farmer. The milk supplied by this farmer the defendant had since had analysed, and it was certified as genuine. As a sample of the alleged adulterated milk had not been left with defendant he had not been able to have it tested independently. Mr. Bros fined the defendant £10.

MILK ADULTERATION.

Sarah Barr, milk dealer, of Cowper Street, City Road, for selling milk adulterated with water, was fined £10 and costs, having been previously convicted.

ADULTERATED MILK AT LEEDS.

At the Leeds Town Hall, before Mr. Bruce, William Dunwell Goodall, farmer, of Grimes Dike Farm, Whinmoor, near Seacroft, was summoned by Inspector Walker for selling milk which upon analysis proved to be adulterated to the extent of 8 per cent. of added water. It was stated that the man had previously been convicted for a like offence, and Mr. Bruce inflicted a penalty of £7. Harriet Marsden, of 7, Foster Street, Hunslet, was summoned for a like offence, the milk having been purchased from the former defendant. Fined 10s., including costs.—John William Mann, grocer and milk dealer, of 48, Crossgreen Lane, Leeds, was charged with adulterating milk. Mr. Walker, dairy inspector, stated that he was supplied with a pint of milk by the defendant's wife. The milk was afterwards analysed and it was discovered that 25 per cent. of water had been added to the milk. Mr. Bruce inflicted a fine of 20s.—George Wilson, a milk dealer, of 225, Jack Lane, Hunslet, was also charged with adulterating milk, the analysis showing that 11 per cent. of water had been added. The same fine of 20s. was inflicted.

Milk and Water.

At Marylebone, William Edward Townsend, a farmer, living at Water Stratford, Buckinghamshire, was summoned by Joseph Osborne, an inspector of nuisances for St. Pancras, for selling milk adulterated by the admixture of water. Mr. Ricketts, solicitor, prosecuted, and Mr. Hammond Chambers, barrister, defended. Mr. Ricketts said that the defendant contracted with the West London Dairy Company (Limited) to supply them with milk. Complaints were made by customers about the quality of the milk the Company were sending out, and it was found that it was adulterated by added water to the extent of from 19 to 21 per cent. Accordingly the inspector attended at Euston Station, and on the arrival of the train from Buckinghamshire he took a sample of the defendant's milk, which was submitted to the public analyst, and his certificate showed that it contained 14 per cent. of added water. Evidence in support of this statement having been given, for the defence it was urged that the defendant, although legally liable for this offence, was not morally. He had entered into an arrangement with Mr. Simkoe, a neighbouring farmer, to supply him with a certain quantity of milk, which was mixed with the defendant's milk and sent up to London. After the complaints were made to him about the quality of the milk he made inquiries, and then ascertained that Mr. Simkoe had diluted the milk he sent him with water. The defendant denied absolutely that he had tampered with the milk in any way. Mr. Simkoe was called, and acknowledged that he had adulterated the milk he supplied to the defendant. As soon as he heard that the defendant had been summoned his conscience pricked him and he informed the defendant of what he had been doing. The defendant was no party to the water being added. Mr. de Rutzen said that for a long time past he had thought that people who supplied milk in London were very much more sinned against than sinning, and he was only too glad to see a case like this taken up in order that it might be ascertained were the wrong came from. Simkoe had told them of the rascally way in which he had acted. He seemed to be under the impression that because persons lived in London they did not know anything about milk, and that he might just as well supply them with milk and water. He should hold the defendant responsible and fine him £15, with the costs.

At Marylebone, Shadrack Hooper, a farmer, of Witley Road Farm, Huntsfield, Bridgwater, was fined £10 with costs for sending milk to the Paddington Station for a London firm, containing 20 per cent. less than the usual proportion of cream.

MARGARINE ACT (1877).

At the Leeds Town Hall before Mr. Bruce, Jeremiah Smith, grocer, of 89, Airedale View, Rodley, was charged with exposing margarine for sale without the necessary labels. A fine of 10s. was inflicted.

PUBLIC HEALTH ACT, 1875.

Obstruction of Medical Officer of Health.

At the Cockermouth Petty Sessions, Joseph Wilson, coal agent and cow-keeper, of Kirkgate, Cockermouth, appeared on a charge of having obstructed Dr. John Robertson in the execution of his duty as medical officer of health for the urban sanitary district of Cockermouth.

The complainant, Dr. Roberstson, in commencing his evidence, said:—On the 14th March I was passing the defendant's premises in Kirkgate and saw the door open. I went in to inspect the cow-shed, with a view to find out its sanitary condition. I saw Wilson and the inspector when I got inside the byre, and went up to where they were standing. Wilson said to me, "By whose permission do you enter these premises?" I said I was the medical officer of health, and that I had a perfect right to enter his premises. He next demanded to know why I had sent a notice to him to close his byre. I said I had not sent him a notice, and I had nothing whatever to do with sending notices. All this time he was greatly agitated, and had his hands clenched in front of my face. He said he had a good mind to pitch me out of the premises. I told him he had better not. He then got hold of me by the collar and breast of my coat, and swung me round, and, with violence, forcibly ejected me from the premises. In reply to Mr. Atter, for the defence: Dr. Robertson said that he had been medical officer to the local board for eight or nine years. He brought this matter before the local board, but they did not take it up, and he laid the information himself. He did not take out a summons for assault, though when he laid the information he told the clerk he was assaulted. He knew what he was complaining about; it was that Wilson had obstructed him in the discharge of his duty. His hours of duty were between nine o'clock in the morning and six in the evening. When he went past the byre he was going to see a patient. He had seen the premises before, but he was not inside them. His desire to inspect the premises on the 14th was to satisfy himself as to their sanitary condition.

In answer to further questions, Dr. Robertson said that he picked Mr. Wilson's byre out because he thought at first that it was a barn, and when he saw that it was a byre he thought the site was very bad, and it would prove injurious to the adjoining tenants.

He would not have taken any further notice of this affair, but he thought it was placing him in a very undignified position.

Witness also stated that he did not tell the defendant he had no right whatever to take the key away. He might have asked him why he had taken away the key, but he was not excited or anything of that kind.

Robert Simon Marsh, inspector of nuisances, stated that when he and the defendant Wilson were in the byre, on March 14, Dr. Robertson came in and said, "How do you do?" The salutation was addressed as much to the defendant as to witness, and the defendant made use of a similar expression. The defendant then asked Dr. Robertson what authority he had in there, and Dr. Robertson said he was the medical officer of health. Defendant further asked why Dr. Robertson had sent him the notice, and witness said he and not the doctor had sent the notice. Dr. Robertson also said that he did not send the notice, and that he had nothing to do with it. The defendant told the medical officer that if he did not mind what he was doing he would pitch him out. Dr. Robertson said the defendant had better not. The defendant then got hold of Dr. Robertson and put him into the street. He got hold of Dr. Robertson with both hands, putting them on the doctor's collar and neck-tie, and in running him out he twisted him round.

The Chairman of the Bench said they thought the defendant had made a great mistake in acting as he had done. He should have apologized when he had the opportunity. Probably the obstruction would not have taken place if the defendant had been cooler, but the medical officer had been put out of the byre, and they must make an example of the defendant by way of protecting such men as the complainant. The defendant would have to pay a fine of 20s. and costs.

Bad Meat.

Edward Nelson, of 52, Central Meat Market, Smithfield, trading as the British and Colonial Meat Company, at 44, Chapel Street, Clerkenwell, was summoned for exposing for sale five pieces of meat which were putrid and unfit for human food. Mr. Bros fined the defendant £10, with 2s. costs.

Exposing Diseased Meat for Sale.

At the Town Hall, Hanley, before Messrs. M. Huntbach (Mayor), S. Cole, and J. Lowe, Thomas Shemilt, butcher, of 28, Hill Street, Hanley, was summoned for having, on April 12, exposed for sale a quantity of pork which was unfit for human food.

Mr. Challinor, for the prosecution, detailed the facts of the case, and said there were thirteen pieces of pork in defendant's shop, and if the case were proved he was liable to a penalty of £260, or to imprisonment extending over three years.

The case for the prosecution was, that on the date

named Dr. Walker, medical officer of health for the borough, visited the defendant's shop and inspected some pieces of meat, consisting of thirteen pieces of pork, which were exposed for sale. They were totally unfit for human food as dropsical fluid was oozing from them. The meat, which was also very flabby, was seized and conveyed before a magistrate, who condemned it, and ordered it to be destroyed.

Dr. Walker, in his evidence, stated that the eating of the meat by any person would either have caused boils, diarrhœa, or fever, as the pig had suffered from some disease.

Joseph Brooks, inspector of nuisances, Mr. Hodgkins, and Mr. James were the other witnesses for the prosecution.

The Mayor said the magistrates were determined as far as possible to prevent anything but sound meat being exposed for sale in the borough. They fined defendant 40s. and costs. His Worship advised defendant to be very careful in the future as to the nature of the animals he dealt in.

William Cooper and his wife, Eliza, were charged with exposing for sale in the market meat that was unsound. The flesh exposed in this case was part of the animal referred to in Shemilt's case. The charge against Mrs. Cooper was withdrawn. William Cooper pleaded guilty to a technical offence. He was fined 20s. and costs.

Keeping Cows without a Licence.

At Wandsworth, Mr. Hannay heard a summons against William Goard, at the instance of the London County Council, for keeping cows in a shed at Streatham without a licence. Mr. Roberts, who supported the summons, explained that the magistrates were formerly the licensing authority, but this duty has been transferred to the Council. The defendant applied for a licence in in October last, but it was refused, and in the following month Mr. Ross, the inspector, discovered that he was continuing the keeping of cows. Mr. Hannay inquired whether the Council had power to administer the oath, and Mr. Roberts answered in the negative. Mr. Hannay thought it was somewhat strange that the duty should be transferred from the magistrates, who had the power to administer the oath, to the Council. Mr. Roberts said the Council was desirous of obtaining powers to administer the oath. He pointed out that the objection to the keeping of the cows was of a sanitary character. Mr. Hannay said the defendant had rendered himself liable to a penalty of £5. On that occasion he would have to pay a fine of 10s.

CANAL BOATS ACT, 1877.

A Canal Boat as a Dwelling.

William Kendall, of Branslow, near Rugby, master of the canal boat *George of Warwick*, lying in the Surrey Commercial Docks, was summoned to the Greenwich Police Court for a contravention of the Canal Boats Act, 1877, for having used the boat as a dwelling for himself, wife, and five children, whilst it was registered as a dwelling for three persons and one under 12 years of age. Wm. Anderson, an inspector of the port of London, deposed to inspecting the boat, on which he found seven persons. The five children were all boys. There was not much more than half as much room as was necessary for those on board. Mr. Marsham, on examining the register, said he thought the sexes of the persons should be mentioned. It was clear that the defendant had two persons too many on board the boat. Inspector Anderson said there was a special regulation for the separation of the sexes except in the case of man and wife. Mr. Marsham fined the defendant 10s. and 2s. costs.

False Certificate of Death.

Mr. R. Campbell, surgeon, of 83, Virginia Row, Bethnal Green, was summoned to answer a charge of having given a false certificate as to the birth of a certain child. In February last the defendant was called in in his professional capacity of accoucheur to attend a Mrs. Cousins. The child was proved by Mary Ann Paxey, a nurse, and by a Mrs. Hodgson to have been born alive, and to have been alive three hours after its birth. It was not stated when it died, but the circumstances led to a coroner's inquiry, and then the defendant gave a certificate that the child was stillborn. Such certificate was sent in the usual way to the Registrar of Deaths for the district, who found on his books the entry of the child having been born alive. The nurse proved that the defendant gave her the particulars to register the birth. The giving of the certificate of the child as "stillborn" was therefore said to be a mistake. The defendant was ordered to pay a fine of £10 and £1 1s. costs.

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NEW INVENTIONS.

THE CARBONISED REFUSE SYSTEM OF SEWAGE PURIFICATION.

Messrs. Jagger, Son & Turley, of 9, East Parade, Leeds, make the following offer for and on behalf of the Rivers Purification Company, Limited, to any local authority desiring to have their refuse and sewage taken off their hands and economically and satisfactorily disposed of. They state that the company has been formed for the purpose of developing and working the above-named system of sewage purification, utilization, and disposal of town's refuse, and is claimed to be the only one that deals in a satisfactory and economical manner with the two most difficult problems that sanitary authorities have to contend with. The company is now prepared to make a contract with corporations on the following lines :—

If one acre of land be provided for each 20,000 inhabitants, and the town and (or) other refuse be delivered at the sewage outfall, they will undertake to purify the sewage and dispose of the refuse for the sum of sixpence per contributing head per annum. They will provide and lay down the necessary plant at their own cost, and will guarantee to produce an effluent which shall at all times

be within the standard of purity laid down by the Rivers Pollution Commission in their 5th report, viz. that a gallon of effluent shall not contain more than—

0·255 grains of organic nitrogen in solution.
1·4 ,, ,, carbon ,,
0·7 ,, dry ,, matter in suspension.
2·1 ,, ,, mineral ,, ,,

And further, the effluent not being poisoned with noxious chemicals, can be guaranteed to be capable of sustaining fish life.

The plant will remain the property of the company, and the contract to be in force so long as they efficiently carry out its terms; but should they fail to do that, they will be under the obligation of removing their plant, and restoring the land to its original condition.

If at any time the corporation are desirous of doing the work themselves, they may do so by paying a yearly royalty, or by purchasing the patent rights out and out, and upon paying the cost price of the plant as shown by the company's books.

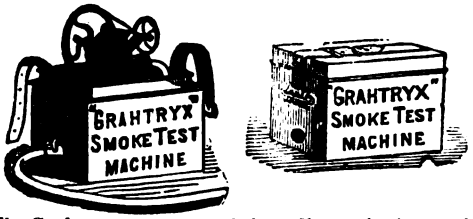
It will be seen that to dispose of the town's refuse and purify the sewage for 6d. per head per annum, inclusive of everything, is an exceptionally low figure, and is much less than the cost of efficiently purifying the sewage alone by any other system. It is only possible because the company's process utilizes the one nuisance to abate the other, thus getting rid of both.

Should there be any difficulty about the delivery of the refuse at the sewage outfall, the company will undertake it themselves, and are prepared to contract for the collection and disposal of the refuse and the purification of the sewage at a cost not exceeding your present outlay for the collection, plus 6d. per head for the disposal and purification work.

SMOKE-TEST MACHINES FOR HOUSE DRAINS.

When the mode of testing the soundness of house drains by what is known as the smoke-test was first introduced, it is doubtful if the inventor of the apparatus of the period fully grasped the many uses for which a simple and well constructed machine could be utilized, besides finding out the weak points in our drains.

No machine for this purpose has probably been so extensively used for subsidiary ones as the "Grahtryx," illustrated below. We are informed that since its introduction over 6,000 of them have already been sold, and have been largely used in some localities under the direction of medical men and sanitary authorities for the disinfection of hospitals, private houses, &c., after infectious diseases with good results. Numbers of them have been sent out at home and abroad, to assist in the arrest of the spread of cholera and infectious diseases, for no parasite or germ can possibly live under the powerful discharge of sulphuric acid ejected by the Grahtryx machine. At the present moment the makers have orders on hand for the Canadian and Australian Governments, for fumigating, destroying rabbits, &c., as well as for drain-testing purposes. Broadly speaking, there is nothing above or below ground in the shape of animal or insect life, the destruction of which is desirable, with which the Grahtryx will not readily and effectually deal, and it can also be used for charging the air of a room with the fumes or vapour of any drug for therapeutical purposes.



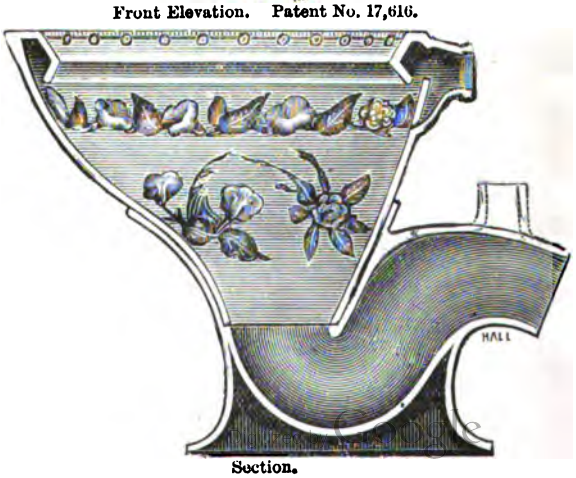
The Grahtryx apparatus of the ordinary size is contained in a box measuring only 15 by 7 by 11 inches, and can also be made in various sizes, is double cased, including the lid, which forms a water jacket when the machine is in use, to neutralise the heat from the smoke chamber. The sulphur, or whatever compound it is desired to use, is placed in the combustion chamber and ignited from the top. The centrifugal fan, which is of brass, is then set in motion, and it will be observed that there are two sets of speed pulleys to work the fan, which is rotated by hand-power, and the smoke thus generated is forced through a specially prepared indiarubber tube fixed near the bottom of the box which forms the combustion chamber. The force created by the rotation of the fan can necessarily be regulated at will, but if worked to its full power, it is capable of driving the fumes to almost any distance through drains, burrows, &c. In cases where a ventilating pipe for admitting fresh air to the drain exists, it can be used for the inlet of smoke instead of disturbing the drains, or even a gully-trap if emptied of the water may be utilized, though the pressure in this case is not so great, as much of the smoke would no doubt find its way into the main sewer. The inventors and makers of this apparatus, Messrs. Baird, Thompson & Co., of Glasgow, have opened a London depôt at 165, Queen Victoria Street, where it can be seen, and all other particulars supplied.

This apparatus is quite portable, and very handy for carrying about.

NEW SANITARY APPLIANCES.

We append illustrations of Messrs. John Bolding & Sons' "Short Hopper" water-closet. This is the newest apparatus of the kind, and is provided with a lead-trap which can be soldered to the soil-trap.

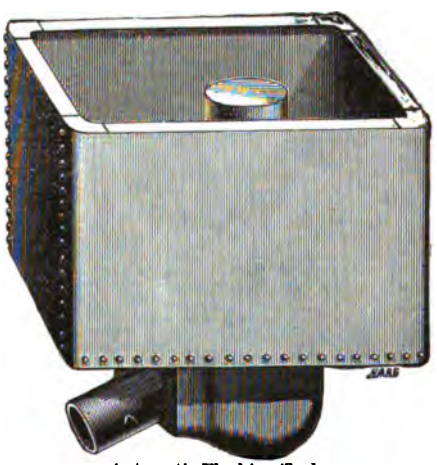
Front Elevation. Patent No. 17,616.



Section.

We also illustrate a new flushing grease-gully, and automatic flushing-tank, also constructed by Messrs. Bolding & Sons. This holds water enough to chill any hot water which goes into it, and to solidify the grease in it. It may be fixed outside or inside of the house. If inside, it must have an air-tight cover. In the scullery, at a place 5 or 6 feet above the floor, is placed the automatic flushing-tank, figured below, which is supplied from the water main by means of a reversed ball valve, with a small tap at the side. As the water comes in from the main it fills the tank, and then discharges itself into the flushing-gulley, and so washes all the grease away into the drain, and by means of this contrivance the grease and sand are washed away, and the drain flushed daily, so that there is no grease-trap and no annoyance.

Flushing Grease-Gulley. Registered No. 72,113.



Automatic Flushing-Tank.

Both these inventions were highly commended by Professor Corfield in a recent lecture on sanitation delivered by him at Carpenters' Hall. They can be had from the patentees, Messrs. John Bolding & Sons, Grosvenor Works, South Molton Street, London, W.

CORRESPONDENCE.

Audi alteram partem.

[*All communications must bear the signature of the writers, though not necessarily for publication.*]

DEFECTS IN PUBLIC HEALTH ACT, 1875.

REFERRING to Mr. Smith's paper on defects in Public Health Act, 1875, sect. 159, the ground floor is that at the ground level, or nearest above it, and includes everything up to the level of the floor above; and a good ground-floor plan should, by dotted or hard lines, show everything, as far as possible, between these limits, and so the first-floor plan between that floor and the one above. So a building pulled down below the level of the ceiling under the first floor, and rebuilt, would be a new building under the Act, and also under the Public Health (Water) Act, 1878. I have had cases under this Act without any demur on the part of owners. If an owner pulled down to the level of the ground floor window-sill, and rebuilt, it would be a new building.

J. H. KELLAM,
Surveyor and Inspector of Nuisances,
Stamford Rural Sanitary Authority.

INCREASED TESTS AND QUALIFICATIONS FOR THE OFFICE OF INSPECTOR OF NUISANCES.

I HAVE read with great pleasure the letter of Mr. C. C. Smith in your last issue, and entirely agree with him in the remarks he so pertinently makes, and have all along persistently advocated in the council and at the general meetings of the Public Sanitary Inspectors' Association the free admission to our society of all persons who may be found qualified to act as sanitary inspectors in the broader sense of the term. I am of opinion that hygiene is a free science, and open to all comers.

I personally object to builders' foremen, or anyone else interested in the trade, following our profession for a livelihood. I also believe that if everyone of our ratepayers and occupiers of houses would take up the sciences of elementary physiology and laws of health our services would be seldom required, and the health of the public rise in proportion. I wish every person in my district knew as much of the subject as myself, and I endeavour to teach them on every occasion, for if we do this we improve their condition immensely, and prevent causes of ill-health arising. Suppose, for instance, everyone knew how to test his own house-drains, kept his cistern clean, had all sinks and waste-pipes cut off from the house-drain, caused the authorities to periodically empty his dust-bin at frequent intervals, saw that he had an ample water supply for sanitary purposes, knew the a b c of disinfection and treatment of infectious cases, personally kept himself and family well washed, clothed, and fed, what a glorious result would be achieved. These elementary laws are free and open to all, and if we could only get the public to practise them, we need not fear for our future welfare; we should still be required, but our labours would be infinitely lighter.

Examinations do not deter men from competition, and generally they are of little practical value; much of that which is learnt is never put into use. What a man wants principally is common-sense, tact, energy, and health for success in this as in any other employment.

FREDK. T. POULSON, Assoc. San. Inst.,
Holder of Honours Certificate in Hygiene (Science and Art Department), South Kensington; Queen's Prizes and Double 1st Class Certificate Advanced Physiology; Council and Founders' Prize Hygiene, Midland Institute, Birmingham; and Chief Sanitary Inspector Vestry of Chelsea.

P.S.—I add these qualifications to show that I am technically as well as practically qualified to speak on this subject, having been seventeen years theoretically and practically engaged in the work of hygiene.

SOME DEFECTS IN THE PUBLIC HEALTH ACT, 1875.

I HAVE been interested in the letter signed "John Houghton, King's Heath, Birmingham," which appeared in your last issue, taking exception to some parts of my paper on the above subject, which appeared in the February number of SANITARY RECORD.

The writer refers to my note to section 19, wherein I state with regard to it that no power of entry is given on private lands. He hastens, however, to inform us that sections 305 and 306 give that power.

These sections are well enough known to every sur-

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veyor, but sections 305 and 306 *are not* section 19. A continuous right to enter is felt by surveyors to be much needed under this section.

Regarding section 23 and the power of an inspector of nuisances to do any act the law requires of a surveyor, Mr. Houghton will perhaps take this friendly caution, that notwithstanding whatever opinion he holds on the subject he had better not, as an inspector only, enter on any legal proceedings, acting on the self-assumption that he is the surveyor by virtue of his appointment as inspector, or he may fare badly.

Sections 4, 191, and clause 13 of article 17 of the General Order of the Local Government Board, Nov. 11, 1872, which he quotes as favouring his ideas are, I regret to find, all against him. A person must be legally appointed as surveyor before he undertakes to appear in legal proceedings as such.

When the writer adds, "Doubtless incompetent persons are appointed to the office of surveyor, but this is a question of defective administration, and not of defective law," he trenches upon still more treacherous ground, and would evidently tell us that medical officers of health need not be qualified medical men, and that all the unrest which is pervading professions and trades at the present time about qualifications and registration is so much nonsense, and merely "a question of defective administration, and not of defective law!"

Anent my remarks as to section 92, Mr. Houghton does not appear to have read the title of my paper, which is confined to "The Public Health Act, 1875." I would repeat that in urban districts, isolated dwellings, away from water mains, cannot be reached under any section in the Act.

I must again disagree with the writer when he refers to section 70. What local authority acting on the words of the section "on the representation of *any* person" would be so hasty as to apply forthwith to a court of summary jurisdiction for an order to close a well.

I might have passed over his allusion to sections 38 and 62 had not the writer under his remarks to section 23 advocated what he here condemns.

Let me add in conclusion that I shall be glad if my paper should be the means of educing the opinions in your journal of other surveyors and inspectors in different parts of the kingdom, as to the defects of the Public Health Act, 1875, and that these may be more generally known and understood.

C. C. SMITH, M.San.Inst.,
Skipton. Certified Surveyor and Inspector.

NOTICES OF MEETINGS.

THE GERMAN PUBLIC HEALTH SOCIETY.

THE German Public Health Society will hold its annual meeting this year at Brunswick from September 13 to 16. The following are the subjects which up to the present have been put down for discussion: Hospitals for Small Towns and for Country Districts; Filterbeds for the Water Supplies of Towns; Cold Chambers for Slaughter-houses; Disinfection of Dwellings; Workmen's Dwellings; Flower-Planting and Gardens in Towns.

CONGRESS OF SCIENTIFIC SOCIETIES.

THE French Minister of Public Instruction has, at the request of the Society for Preventing the Abuse of Tobacco, added the following subject of discussion to the programme of the Congress of Scientific Societies which is to meet at Paris on May 27:—"The Influence on Hygiene and Morality of the Narcotics which are in common use throughout the populations of the globe."

AN INTERNATIONAL TEMPERANCE CONGRESS.

THE third International Congress on the Abuse of Spirituous Liquors and its Prevention is fixed to take place at Christiania from September 3 to 5, under the presidency of Professor Forel, of Zürich. Full particulars can be obtained from Dr. G. E. Benzen, of Christiania, the general secretary of the Congress.

THE ANNUAL PROVINCIAL MEETING OF THE ASSOCIATION OF PUBLIC SANITARY INSPECTORS OF GREAT BRITAIN.

BY kind invitation of the Mayor and Corporation the fifth annual provincial meeting of the Association will be held at Leamington, on Saturday, May 24, 1890 (Whitsuntide). The President and Sir Douglas Galton, K.C.B., have kindly promised addresses on that occasion. The Council trust that members individually will do what they can to make the occasion worthy of the Association and not less successful than previous meetings. It will facilitate the arrangements if the members, as soon as possible, will give the secretary the earliest intimation of their intention to be present at this meeting.

SAMUEL C. LEGG, Hon. Secretary.

THE METROPOLITAN PUBLIC GARDENS ASSOCIATION.

A MEETING of members was held at 83, Lancaster Gate on April 2, at which the Earl of Meath presided. A gift of £20 for a drinking fountain was announced. The formation of a new Society, under the name of the London Playing Fields Committee, was reported, three representatives of the Association being on the Committee. It was decided to lay out the Seward Street disused Burial ground, formerly the graveyard of St. Bartholomew's Hospital, at once, the London County Council having promised £131 towards the work, and it was stated that the Council had also promised £800 towards the purchase of the ground in Great Church Lane, Hammersmith. £70 was voted for improvements in the neighbourhood of Trafalgar Square; £5 for improvements in that of Victoria Docks; and it was agreed to lay out Sydney and Bedford Squares, E., if the maintenance were secured. It was announced that seats had been accepted for Muswell Hill Road, that seats had been refused for High Street, Kensington, and that trees were asked for for Barking Road and Hammersmith. Amongst many other matters brought before the meeting were questions relating to Euston Square, the Hackney Marshes, the Main Drainage Embankment, the Hilly Fields, Emmanuel Hospital, Fortune Green, Roadways across Hampstead Heath Extension and Wandsworth Common.

LOCAL INTELLIGENCE.

DR. WILLIAM R. SMITH has been appointed Medical Officer to the School Board for London, at a salary of £400 per annum.

THE death of Mr. J. P. Nicolls, medical officer of Navan Union Hospital and Dispensary, at the early age of thirty-five years, took place on March 15. His kindly, genial disposition endeared him to a large circle of friends.

AT a recent special meeting, the Daventry Town Council entered into an agreement with Mr. C. Nicholson Lailey, of Westminster, for preparing a scheme for main drainage, in order that the town clerk may apply to the Local Government Board for the loan required to carry out the work.

MR. EDWARD A. PIGGOTT, L.R.C.P. and S.Edin., Public Vaccinator for the 2nd District of the Risbridge Union (Suffolk), has received a certificate from the Local Government Board under section 24 of the Local Government Act, 1888, entitling him to the award (second time) for efficient vaccination in his district. These payments are now, under the provisions of the above Act, made by the County Councils.

A CONFERENCE has been arranged for April 24, between the Walthamstow, Wanstead, and Woodford Sanitary Authorities to consider the advisability of combining for the purpose of providing a common hospital for the isolation of infectious fevers, under sect. 131, Public Health Act, 1875.

SANITO-PARLIAMENTARY.

HOUSE OF LORDS.—MARCH 20.

SMOKE NUISANCE IN THE METROPOLIS.

Lord Stratheden and Campbell introduced a Bill which had for its object the abolition of the smoke nuisance in the metropolis, and stated that it was similar in its provisions to the measure brought in last Session, except that it was proposed to give extended powers to the London County Council. The noble lord said he would not move the second reading until local bodies had had an opportunity of scrutinizing the details.

The Bill was read a first time.

MARCH 26.

OPEN SPACES BILL.

The Earl of Meath, in moving the second reading of this Bill, said its principal object was to improve existing legislation on the subject, and to give facilities for the acquisition and maintenance of open spaces to local authorities generally by extending to them powers which were at present vested only in certain authorities. The existing legislation was as follows:—In 1877 an Act was passed for affording facilities for the enjoyment by the public of open spaces in the metropolis. This was followed in 1881 by an Act to amend the Metropolitan Open Spaces Act of 1877. In 1884 an Act was passed to prevent the erection of buildings on disused burial-grounds, and in 1887 Parliament passed an Act for extending certain provisions of the Metropolitan Open Spaces Acts of 1877 and 1881, with amendments, to sanitary districts throughout England, Wales, and Ireland. The past legislation had proved of the greatest service, but certain legal difficulties had arisen in some cases in carrying out the evident intentions of the Legislature, and the object of

the present Bill was to remove those difficulties. The first and second sections of the Bill were of a formal character, and related to the simplification of the title of the Bill and the definition of words. The third clause empowered trustees to convey open spaces to local authorities in cases where there was nothing to prevent them from doing so now save the general equitable rule which did not allow trustees to delegate their office. The former Acts, he might observe, emancipated trustees in the far stronger cases of trusts held under Acts of Parliament. The 4th and 5th sections of the Bill were designed to meet the case of gardens which were held for the benefit of hospitals or charities and which were not within clauses 2 and 3 of the Act of 1881, because the surrounding householders had no right of access to them. The 6th clause extended the operation of section 12 of the Open Spaces Act of 1887 to any local authority. At present a vestry or district board had no power of purchasing land for an open space unless the land came within the definition of "open space" that was contained in the Acts of 1881 and 1887. The 7th clause provided that there should be no enclosure of metropolitan commons without the consent of Parliament in each instance. Until the year 1866 commons could be enclosed by Enclosure Acts or by the lord of the manor arbitrarily. The Select Committee of 1865 recommended that no enclosure should take place within the metropolitan area, and the Enclosure Commissioners were deprived of the power to enclose Metropolitan Commons by the Metropolitan Commons Act, 1866. The Commons Act of 1876 enunciated the principle that commons should be regulated in the public interest. The lord of the manor still had the power to enclose by the Statute of Merton, passed in 1235, during the reign of Henry III., although the Select Committee of 1865 recommended "that the statute should be repealed as having fulfilled its purpose, and been superseded by modern legislation, and as being especially ill-adapted to commons and open spaces near the metropolis." In the case of Epping Forest, and Berkhampstead, Tooting, Coulsdon, and Banstead commons the commoners had been compelled to defend their rights at a vast expenditure. It was to obviate this waste of means and to prevent the injustice which might arise when funds were not forthcoming that the 7th clause of the present Bill was designed. The object of the 8th section was to enable metropolitan local authorities to purchase land wholly or partly without the area. Local authorities outside London already had this power conferred upon them by the Public Health Act, section 12 of the Open Spaces Act of 1887 was copied verbatim from the Public Health Act, but the draftsman omitted another clause of the latter statute giving power to buy land in or out of the district. The result was that East Ham could take North Woolwich Gardens even if all of it were in London, but the London County Council could not take the part which was in East Ham.

The Bill was then read a second time and referred to the Standing Committee on Law.

HOUSE OF COMMONS.—March 11.

The Removal of Sewage Sludge.

In reply to Major Rasch,

Mr. Ritchie said:—I am informed that the London County Council, in advertising for tenders for the removal of sewage sludge, do not contemplate that the sludge shall be discharged into the sea at points nearer to the shore than the places where it has been discharged hitherto from the vessels belonging to the Council. The object of advertising for tenders is, that pending the consideration of the whole question of the disposal of the London sewage, temporary arrangements may be made for the removal of the sludge without the large expense of providing new vessels for the purpose. It was considered necessary to provide in the tender for the discharge of the sludge at such points as the engineer of the Council should indicate, but the places named will be subject to the direction of the Trinity House, and there will be no change in this respect from the course pursued throughout the last six months.

Typhoid Fever Among British Troops in India.

Sir W. Foster asked the Secretary of State for War whether typhoid fever had been very prevalent amongst officers and men of the British troops in India during the years 1887, 1888, and 1889; whether he could state the number of deaths for each of those years; whether the deaths had been most numerous amongst the young soldiers; and whether any steps were being taken to stop the ravages of this preventible disease.

Mr. E. Stanhope.—Typhoid or enteric fever has been very prevalent in India during the last three years, and was especially fatal last year. The deaths from this disease were 247 in the year 1887, 267 in the year 1888, and 420 last year, as to which year, however, the figures must be regarded as approximate only. The deaths have been most numerous among young soldiers. All possible precautions are taken to prevent the insanitary conditions which are believed to induce this disease. Cantonments and barracks, with the neighbouring towns and bazaars, are strictly supervised, and the purity of water, milk, and food generally is secured by all practicable means. During the last year a Special Commission investigated the sanitary state of Lucknow and Meerut with particular reference to enteric fever. The liability of young soldiers to this disease is a principal reason for not allowing men under 20 years of age to proceed to India.

March 17.

Infant Life Protection Bill.

The Infant Life Protection Bill was read a second time after some discussion, and referred to a Select Committee.

The Lunacy Laws.

In answer to Mr. W. Corbett,

Mr. Matthews said,—I am informed by the Lunacy Commissioners that the number of single patients mentioned in the report for 1889 included all the single patients at that date known to the Commissioners. The Commissioners have no power to visit a house suspected of containing a lunatic in illegal charge—i.e., of whom charge is taken for payment. When they receive information which leads them to suppose that a person is being detained as a lunatic illegally, they cause inquiry to be made through the police, by means of an order to visit issued by the Lord Chancellor or otherwise, and if evidence can be obtained establishing an infringement of the law they prosecute the offender. The Commissioners have also published in the medical and other journals cautions against breaches of the Lunacy Laws.

March 21.

Medical Requirements in Emigrant Ships.

Dr. Tanner said that two years ago he had framed an amendment to call attention to the insufficient provision for medical requirements on board Atlantic liners for steerage passengers, and to the risk of master mariners having to act as physicians on long voyages. The rules of the Board of Trade with regard to emigrants ought to be carried out in their entirety. For the welfare of emigrants few things were more essential than proper medical attendance. If better men were not available in sufficient numbers, gentlemen who had only completed half the medical course—unqualified practitioners, as they were called—might be given the duty.

Tuberculosis.

Mr. Knowles called attention to the subject of tuberculosis, which, he said, was very prevalent among aged milch cows of the Ayrshire and shorthorn breeds, and, dwelling upon the danger of the disease being transmitted from animals to human beings, urged the expediency of the disease being included in the schedule to the Contagious Diseases (Animals) Act.

Dr. Farquharson, in the course of an elaborate description of the way in which the disease is propagated, enlarged upon the danger to which human beings are exposed in consequence of cattle being afflicted with tuberculosis, and maintained that it was the duty of the Agricultural Department to find some remedy.

Mr. M. Stewart, speaking on behalf of cattle breeders, admitted that the disease was increasing in cattle, and joined in urging the Agricultural Department to adopt stringent measures for watching its progress.

Mr. Chaplin, pointing out that great difference of opinion prevailed among scientists with regard to the disease, contended that at present the subject was one demanding the attention of experts rather than of his department, and he was satisfied, he said, that no order of the Board of Agriculture would lead to the extermination of the disease, because there was every reason to believe that the disease was communicated from man to animals as well as from animals to man.

Sir L. Playfair, dwelling upon the increase of consumption in children, which, he said, was largely due to the use of tuberculous milk, appealed to Mr. Chaplin to take steps to mitigate what he regarded as a very serious evil.

Labourers (Ireland) Act.

Mr. Webb asked the Chief Secretary to the Lord Lieutenant whether it was a fact that up to September 1889 a sum of £665,150 had been issued as a loan under the Labourers (Ireland) Act, and that since that date further large sums had been sanctioned as loans under the same Act; whether there had been considerable delay in the issue of instalments caused by the insufficient number of inspecting engineers employed by the Local Government Board; whether this deficiency had in many cases led to a very incomplete and unsatisfactory inspection; whether in many cases the inspectors had found it impossible properly to control the works in progress, and that consequently many of the houses had been badly built, in some cases mud mortar only having been used; and whether he would take steps to secure that public money should not be used for the erection of inferior buildings.

Mr. A. J. Balfour.—The facts are substantially as stated in the first paragraph. The Local Government Board are not responsible for any delay which may have occurred in the issue of instalments. The principal cause of any such delay has been remissness on the part of the architects of the sanitary authority in not getting defects remedied when pointed out by the Local Government Inspectors. There is no information to show that in any case an incomplete and unsatisfactory inspection has been made. On the contrary, it is believed that all the inspections have been made in a thorough manner, and that full time has been given to each case. The control or supervision of the works in progress is not in the hands of the Local Government inspectors, but of the architect or clerk of works of the sanitary authority. It is the case that in one union it was found that improper mortar had been used, but the Local Government Board forthwith required the work to be pulled down and rebuilt. The Local Government inspectors exercise due diligence in their inspections, but the responsibility of closely watching the work while it is being carried on rests with the officers of the sanitary authority.

The Allotments Act (1887) Amendment Bill.

March 24.

Mr. Ritchie, in moving the second reading of the Allotments Act (1887) Amendment Bill, said that the Bill had had the effect

of increasing the number of allotments granted voluntarily either by arrangement between the labourer and the landowner or between the sanitary authority and the landowner. There had, however, been instances in which the sanitary authority had failed in proper cases to exercise its compulsory powers, and, in order to meet such cases, the Bill proposed to allow an appeal to the county council on the representation of any six qualified persons. The Bill provided, moreover, that the county council should have power to direct the sanitary authority to exercise its compulsory powers; but in order to avoid delay he proposed to move amendments in Committee conferring upon the county council the powers of the sanitary authorities in all cases where, upon such appeal, it appeared that the sanitary authority had failed to exercise such powers.

The Bill was read a second time.

LABOURERS' COTTAGES BILL.

Sir E. Birkbeck obtained leave to introduce a Bill to confer further powers on rural sanitary authorities with respect to labourers' cottages.

The Bill was read a first time.

MARCH 31.

CHEAP CARRIAGE OF MILK.

Mr. Brunner asked the President of the Board of Trade whether his attention had been called to the report made by Dr. Fox to the rural sanitary authorities of Mid Cheshire districts on the importance to the public health of cheap rates of carriage for milk; and whether the Railway Commissioners in deciding upon the matter were empowered to take into their consideration this most important question of the public health.

Sir M. Hicks-Beach.—I have seen the report referred to, and agree as to the importance of cheap rates of carriage for milk. The Act of Parliament contains no special provision with regard to milk, but in fixing *maximum* rates for that as well as other articles the Board of Trade must take into consideration all the circumstances affecting the case.

INSANITARY LAW COURTS.

Mr. Channing asked the Home Secretary whether his attention had been called to the statement of Mr. Justice Denman at Chelmsford on Friday, March 21, that the Assize Court was in such an insanitary state as to be a perfect disgrace and dangerous to Judges, counsel, and prisoners, and, further, to the similar comments made by Mr. Justice A. L. Smith and Mr. Justice Wills on Thursday, March 27, at Cardiff, as to the sickening smells in the Assize Court at Cardiff; whether attention was drawn by the Departmental Committee two years ago to the insanitary condition of these Courts; and whether he would take immediate steps, by representations to the local authority or otherwise, to have these and other Courts which might have been similarly complained of put into a proper sanitary condition.

Mr. Matthews.—Yes, Sir. The learned Judge has called my attention to the state of the Court at Chelmsford, but I have not seen the comments referred to as to the Cardiff Court. The duty of providing a proper Court-house and accommodation for prisoners awaiting trial rests with the local authorities. In consequence of the report of the Committee of 1886, I made strong representations to all the local authorities throughout the country, including those of Chelmsford and Cardiff. At Cardiff many improvements have been made. With regard to Chelmsford I again in July last asked the justices to take the earliest opportunity of giving effect to the recommendations of the Committee. I am now making further inquiry with regard to both places.

APPOINTMENTS.

MEDICAL OFFICERS OF HEALTH.

ABBOTT, Charles Edward, L.K.Q.C.P.I., M.R.C.S., has been re-appointed Medical Officer of Health for the Braintree Urban and Rural Sanitary Districts for one year.

ADAMS, J. Dixon, M.D., M.R.C.S., has been re-appointed Medical Officer of Health to the Yeovil Rural Sanitary District.

ALLDEN, John H., M.R.C.S., L.S.A., has been re-appointed Medical Officer of Health for Shirely.

BAILEY, J. Johnson, has been re-appointed Medical Officer of Health to the Marple Urban Sanitary Authority.

BENNET, Charles John, M.R.C.S.Eng., has been re-appointed Medical Officer of Health to the Rural Sanitary District of the Chapel-en-le-Frith Union.

BLAKISTON, A. Alexander, M.R.C.S.Eng., L.S.A., has been re-appointed Medical Officer of Health to the Borough of Glastonbury.

BONAR, Thomas Mitchell, M.B.Glas., C.M., has been appointed Medical Officer of Health to the Eastern Division of the Truro Rural Sanitary Authority, *vice* Henry Caddy, M.R.C.S., L.S.A., deceased.

BOND, Francis Thomas, M.D.Lond., A.B., M.R.C.S., has been re-appointed Medical Officer of Health to the Gloucester combined Districts.

BRADSHAW, James C., L.R.C.P., L.R.C.S., C.P.H., has been re-appointed Medical Officer of Health to the Brackley Rural Sanitary Authority for two years.

BROSTER, A. E., L.R.C.P.Edin., M.R.C.S.Eng., has been re-appointed Medical Officer of Health to the Wirksworth Local Board.

CAUTLEY, William Clapham, M.R.C.S., L.S.A., has been re-appointed Medical Officer of Health to the Knaresborough Rural Sanitary Authority.

CHEESEWRIGHT, J. F., L.R.C.P.Edin., has been re-appointed Medical Officer of Health to the Greasbrough Local Board.

CLEGG, Walter, M.R.C.S., L.S.A., has been re-appointed Medical Officer of Health to the Boston Rural and Urban Sanitary Districts and Port.

COLLINGRIDGE, W., M.D., M.R.C.S., has been re-appointed Medical Officer of Health to the Port of London.

DE'ATH, George Hanby, L.R.C.P., M.R.C.S., has been re-appointed Medical Officer of Health of the Buckingham Rural and Urban Sanitary Districts.

DAVIES, Edward, M.D., M.R.C.S., has been re-appointed Medical Officer of Health for No. 2 Rural Sanitary District of the Wrexham Union.

DURRAN, David, M.B., C.M., has been appointed Medical Officer of Health to the Parish of Olrig.

DYKE, Thomas Jones, F.R.C.S.Eng., L.S.A., has been re-appointed Medical Officer of Health of the Merthyr-Tydvil Urban and Rural Sanitary Districts.

EASON, Alexander M., L.R.C.P., L.R.C.S.Edin., has been re-appointed Medical Officer of Health to the Lytham Urban Sanitary District.

FAUSSET, Herbert J., M.D., M.Ch.Dub., has been re-appointed Medical Officer of Health to the Tamworth Rural Sanitary District.

FISHER, J. B., M.B., C.M., has been re-appointed Medical Officer of Health to the Whitehaven Union Rural Sanitary Authority.

FORSYTH, Robert, M.D.Glas., M.B. & C.M., has been re-appointed Medical Officer of Health to the Drighlington Urban Sanitary Authority.

GEDDIE, William, C.M., M.D.Aber., has been appointed Medical Officer of Health and Public Vaccinator to No. 2 District (North-West and South-West Wards) of the Borough of Accrington.

GODSON, A., M.A., M.B., has been re-appointed Medical Officer of Health to the Cheadle and Gatley Local Board.

GOODALL, J. Kenaz, L.R.C.P., L.R.C.S.Edin., has been re-appointed Medical Officer of Health to the Whittington Urban Sanitary District.

GRIFFIN, Innes, M.R.C.S., L.S.A., has been re-appointed Medical Officer to the Banbury Town Council.

HAILEY, Melville M., L.R.C.P., has been re-appointed Medical Officer of Health to Newport Pagnell Sanitary Authority.

HARRIS, Spencer Claben, L.F.P.S.Glas., L.M., L.S.A., has been re-appointed Medical Officer of Health to the Ely Urban Sanitary Authority.

HERRON, James, M.D., has been appointed Medical Officer of Health to the Board of Works for the St. Saviour's District, *vice* Robert Bianchi, deceased.

HESLOP, William John, L.K.Q.C.P., F.R.C.S.Edin., has been re-appointed Medical Officer of Health to the Stretford Urban Sanitary Authority.

HODGSON, Isaac C., M.B., C.M., has been re-appointed Medical Officer to the Workington Port Sanitary Authority.

JAMIE, R. Wyatt, M.A.Aber., M.B.Edin. & C.M., has been re-appointed Medical Officer of Health to the Ashby-de-la-Zouch Rural Sanitary Authority, Hugglescote District.

JOHNSTONE, G. W., L.R.C.P.Edin., has been re-appointed Medical Officer to the Upholland Urban Sanitary Authority.

JONES, W., L.R.C.P., M.R.C.S., has been re-appointed Medical Officer of Health to No. 1 District of the Wrexham Rural Sanitary Authority.

JONES, W. M., M.R.C.S., has been re-appointed Medical Officer of Health to the Swinton Urban Sanitary Authority.

KERSWILL, John Bedford, M.R.C.P.Eng., M.R.C.S.Eng., F.L.S., has been re-appointed Medical Officer of Health to the St. Germans Rural Sanitary Authority for three years.

KYLE, Thomas William, M.D.Qu.Univ.Irel., L.M., M.Ch., has been re-appointed Medical Officer of Health to the Ashby-de-la-Zouch Rural Sanitary Authority, Measham District.

LLOYD, K. M., M.R.C.S., has been re-appointed Medical Officer of Health to the Holywell Urban Sanitary Authority.

LOVETT, Samuel R., L.R.C.P.Edin., L.M., L.S.A., has been re-appointed Medical Officer of Health to the St. Giles's District.

MACKINTOSH, Angus, M.D., has been re-appointed Medical Officer of Health to the Dronfield Urban Sanitary Authority.

MARTIN, A. W., L.R.C.P., L.R.C.S.Edin., has been re-appointed Medical Officer of Health to the Gorton Local Board. Salary increased from £60 to £80 per annum.

MURGE, Thomas Henry Tracey, L.R.C.P.Lond., M.R.C.S.Eng., has been re-appointed Medical Officer of Health to the Paignton Urban Sanitary District.

PARSONS, F. Y. C., L.R.C.P., M.R.C.S., L.S.A., has been re-appointed Medical Officer of Health to the Bridgewater Port Sanitary Authority.

PARTRIDGE, Thomas, M.K.Q.C.P., M.R.C.S.Eng., &c., has been re-elected Medical Officer to the Stroud Urban Sanitary District for three years, and to the Stroud Rural Sanitary District for one year.

PEACOCK, Edwin, M.R.C.S., L.S.A., has been re-appointed Medical Officer of Health to the Chilvers Coton Urban Sanitary District.

PORTER, F. J., M.D., has been re-appointed Medical Officer of Health to the No. 1 District of Helmsley Rural Sanitary District.

RAIMES, Alwyn, M.B., has been re-appointed Medical Officer of Health to York Rural Sanitary Authority.

SERGEANT, Edward, L.R.C.P.Lond., M.R.C.S., Ex-President of the North-Western Association of Medical Officers, has been appointed Medical Officer of Health for the County of Lancashire, at a salary of £800 per annum.

SHADWELL, St. Clair B., L.R.C.P.Lond., M.R.C.S., has been re-appointed Medical Officer of Health to the Walthamstow Urban Authority.

STEPHENS, Edward, L.R.C.P.Edin., and L.M., M.R.C.S.Eng., has been re-appointed Medical Officer of Health to the Chard Rural Sanitary Authority.

SWANN, Alfred, M.D., has been re-appointed Medical Officer of Health to the Batley Town Council.

TWINING, A. Hughes, M.R.C.S., L.S.A., has been re-appointed Medical Officer of Health to the Kingsbridge Rural Sanitary Authority.

WATERS, Alfred John Gulliver, L.R.C.P.Edin., L.M., M.R.C.S., has been appointed Medical Officer of Health to the March Local Board, *vice* William Stephen Johns, L.R.C.P., L.R.C.S. Edin., at £30 a year.

WAUGH, Alexander, L.R.C.P., M.R.C.S., has been re-appointed Medical Officer of Health to the Midsomer-Norton Urban Sanitary Authority.

WILSON, George, M.R.C.S.Eng., L.S.A., has been re-appointed Medical Officer of Health to the Clutton Rural Sanitary Authority.

WOODWARD, William, M.D.St. Andrews, L.R.C.P.Lond., M.R.C.S. Eng., has been re-appointed Medical Officer of Health to the Malvern Link Urban Sanitary District.

POOR-LAW MEDICAL OFFICERS.

BODY, H. Marten, M.R.C.S., L.S.A., has been re-appointed Medical Officer to the Tedburn St. Mary District of the St. Thomas Union.

BONAR, Thomas Mitchell, M.B.Glas., C.M., has been appointed Medical Officer and Public Vaccinator to the Probus District of the Truro Union, *vice* Henry Caddy, M.R.C.S., L.S.A., deceased.

BONSALL, George B. E., L.R.C.P.Edin., L.R.C.S.Edin., has been re-appointed Medical Officer and Public Vaccinator to the Aberystwith Workhouse and District.

BROWN, David, L.K.Q.C.P.Irel., M.R.C.S.Eng., has been appointed Medical Officer of the Workhouse, New Winchester Union, *vice* William England, M.D.Edin., resigned.

BRUCE, Robert M., M.R.C.S., L.S.A., has been appointed Medical Superintendent of the Western Hospital of the Metropolitan Asylum District, *vice* Dr. Sweeting, resigned.

BURMAN, W. Maxwell, L.R.C.P., M.R.C.S., has been re-appointed Medical Officer for the Wath District of the Rotherham Union.

CLARK, M., M.B., has been appointed Medical Officer to the Belford Union.

CORKERY, Dr., has been re-appointed Medical Officer to the Alfreton District of the Belper Union.

COWIE, John, M.B.Aberd., C.M., has been appointed Medical Officer for No. 6 District of the Devizes Union.

DAVIES, Thomas, M.R.C.S.Eng., L.R.C.P.Edin., has been appointed District Medical Officer and Public Vaccinator to the United Parishes of Whittlesey, *vice* C. F. Harding, M.D., resigned.

DEANE, S. Robert, L.R.C.S., L.A.H.Dub., has been appointed Medical Officer for the 8th District of the Lincoln Union.

EVANS, Samuel, L.R.C.P.Lond., M.R.C.S.Eng., has been re-appointed Medical Officer to No. 2 District of the Tendring Union.

EVERARD, W. P., L.R.C.P.I., L.R.C.S.I., has been appointed Medical Officer to the Brideswell Dispensary District, Athlone Union, *vice* Dr. P. B. White.

FLINN, John James, L.R.C.P.Edin., M.R.C.S., has been appointed Medical Officer to the Belmont Road Workhouse, West Derby Union.

FLUX, George Belben, M.R.C.S., L.R.C.P., L.S.A., M.D., has been appointed Medical Officer and Public Vaccinator to the Highworth and Swindon Union, at £70 per annum.

FORD, Joseph, M.R.C.S., has been re-appointed Medical Officer of Health to the Wedmore District of the Axbridge Union.

FORREST, John Geo. Stracey, L.R.C.P.Lond., M.R.C.S.Eng., has been appointed Medical Officer for the Finchingfield District of the Braintree Union, *vice* C. Jameson, M.B.Glasgow, C.M., resigned.

FOSTER, Francis Wheldale, M.R.C.S., has been re-appointed Medical Officer to No. 11 District of the Tendring Union.

FRAND, William Thomas, M.B., has been appointed Medical Officer for the Thornhill District of the Dewsbury Union.

GARMAN, Walter C., M.B., has been appointed Medical Officer and Public Vaccinator for No. 1 Wednesbury District of the West Bromwich Union, *vice* W. C. Garman, M.R.C.S., resigned, at a salary of £75 per annum.

GOODE, Chas. Fox, M.R.C.S.Eng., L.S.A.Lond., has been appointed Medical Officer for the Northern District and Public Vaccinator for the Eastern District of the Parish of Brighton, *vice* Dr. J. H. Ross, deceased.

GRANGER, Edgar B., L.R.C.P.Lond., M.R.C.S.Eng., has been appointed Medical Officer to the Kettlewell District of the Skipton Union, *vice* P. P. Johnson, M.B., resigned.

GRAY, F. Archibald, L.R.C.P.Lond., M.R.C.S.Eng., has been re-appointed Medical Officer to the Newton Poppleford District of the St. Thomas Union.

GREEN, Arthur, M.B., M.R.C.S., has been appointed Medical Officer to the East District of the Gateshead Union, at £80 a year.

HARRATT, Henry, M.R.C.S., L.R.C.P., has been appointed Medical Officer to the 8th District of the Battle Union, at £30 per annum, and Medical Officer and Public Vaccinator to the 2nd District of the Rye Union, at £45 per annum and fees, *vice* Charles Harris, M.D.St.And., deceased.

HOPE, M., L.R.C.P., L.R.C.S.Edin., has been re-appointed Medical Officer and Public Vaccinator to the Codnor Park District of the Basford Union.

IRVINE, John, C.D., M.B., C.M., has been appointed Medical Officer for the Parish of Nuthill, *vice* Dr. Alexander Valentine.

IVENS, A. S., L.R.C.P.Edin., M.R.C.S.Eng., has been re-appointed Medical Officer and Public Vaccinator to No. 8 District of the Tendring Union.

MACKEITH, Alexander A., M.B.Glas., C.M., has been re-appointed Medical Officer and Public Vaccinator to the Brampford District of the St. Thomas Union.

MCINERNEY, Thomas, M.B., L.San.Sci., L.R.C.S.I., L.K.Q.C.P. Ireland, &c., has been appointed Medical Officer to the Killaan Dispensary of the Ballinasloe Union.

MITCHELL, Robert, M.A., M.B., C.M., has been appointed Medical Officer to the New Relief Hebburn District, South Shields Union, at a salary of £20 per annum.

MONAGHAN, Thomas Joseph, L.R.C.S., L.R.C.P.Edin., has been appointed Medical Officer and Public Vaccinator to No. 1 District (North-east and South-east Wards) of the Borough of Accrington, at a salary of £80 per annum.

MORRIS, Walter, L.R.C.P.Edin., L.F.P.S.Glas., has been appointed Medical Officer of the Workhouse, Bolton Union, *vice* J. H. Marsh, L.R.C.P., L.R.C.S.Edin., resigned.

MORTON, Richard John, M.R.C.S.Eng., L.S.A., has been appointed Medical Officer and Public Vaccinator to No. 6 District of the Aylsham Union and Medical Officer to the Workhouse, *vice* R. Kay Morton, at a salary of £26 for the District and £25 for Workhouse.

MUGFORD, S. A., has been re-appointed Medical Officer to the Parishes of Ardleigh, Great Bromley, and Wix, of the Tendring Union.

PEAKE, W. Pemberton, L.R.C.P.Lon., M.R.C.S., has been appointed Medical Officer to No. 4 District of the Leicester Union.

POPE, Edward, M.R.C.S., L.S.A., has been re-appointed Medical Officer for the Oldbury District of Berkhamsted Union.

PUDDICOMBE, E. Leonard, L.R.C.P.Lond., M.R.C.S.Eng., has been re-appointed Medical Officer to the Rewe District of the St. Thomas Union.

REID, J. R., M.B., C.M.Aberd., has been appointed Medical Officer of the Oswaldkirk District of the Helmsley Union, *vice* F. Dowker, M.R.C.S.

REYNOLDS, Hubert S., L.R.C.P., F.R.C.S.Edin., has been appointed Medical Officer for No. 4 District of the Royston Union, *vice* L. M. Earle, M.D., resigned.

SERS, Robert Hanslip, M.R.C.S., L.S.A., has been re-appointed Medical Officer and Public Vaccinator to the Calverton District of the Basford Union.

SKINNER, R. V., M.R.C.S., L.S.A., has been re-appointed Medical Officer to the 3rd District of the Rye Union.

SMITH, G. W., M.R.C.S., L.S.A., has been re-appointed Medical Officer and Public Vaccinator to the Gotham District of the Basford Union.

SQUIRE, E. H., M.R.C.S.Eng., L.S.A., has been re-appointed Medical Officer of the Parish of Elmstead District of the Tendring Union.

STUBBS, Henry, M.R.C.S., has been appointed Medical Officer to the Madeley Union.

THOMAS, Alfred, L.R.C.P., M.R.C.S.Edin., has been appointed Medical Officer for the Cottage Homes, West Derby Union.

TONKS, Joseph, M.R.C.S.Eng., L.A.H.Dublin, has been appointed Medical Officer of Health for the District of Willenhall, Wolverhampton Union, *vice* John T. Hanfill, L.R.C.P., M.R.C.S., at a salary of £140 per annum.

WAYE, E. R., M.R.C.S., has been appointed Medical Officer to the Bramley Union, *vice* Dr. Slesser.

WEIR, Alex. McCook, M.D.Qu.Univ.Irel., L.R.C.S.Edin., has been appointed Medical Officer to the Eversholt District of the Beaminster Union, *vice* A. Butler, L.K.Q.C.P., &c., resigned.

WETWAN, W. Albert, M.R.C.S., L.S.A., has been appointed Medical Officer and Public Vaccinator to the No. 2 District of the Bridlington Union.

WHITCOMBE, C. H., F.R.C.S.Edin., has been appointed Medical Officer to the 1st District of the Sevenoaks Union, *vice* A. Young, M.R.C.S., resigned.

WRIGHT, Frederick, L.S.A., has been re-appointed Medical Officer to the No. 3 District of the York Union.

INSPECTORS OF NUISANCES.

ARCHIBALD, G. T., has been re-appointed Inspector of Nuisances to the Workington Port Sanitary Authority.

BERESFORD, S., has been re-appointed Inspector of Nuisances to the Huntingdon Town Council.

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BEANSON, G. W., has been re-appointed Inspector and Surveyor to the Newport Pagnell Sanitary Authority.

BUNYAN, Albert, has been appointed Inspector of Nuisances to the Royston Rural Sanitary Authority, *vice* J. Browning, resigned.

CAPON, Edward R., has been appointed Inspector of Nuisances to the Harrow Urban Sanitary Authority, at a salary of £100 per annum.

CHATTERTON, A., has been appointed Inspector of Nuisances to the Camberwell Vestry.

CHINCHEN, J., has been re-appointed Inspector of Nuisances to the East Cowes Local Board.

COLE, John, has been re-appointed Sanitary Inspector to the Ivybridge Urban Sanitary Authority, at a salary of £40 per annum.

DAWES, E., has been re-appointed a Sanitary Inspector to the Wrexham Rural Sanitary Authority.

DEAN, C., has been appointed Inspector of Nuisances to the Hornsey Local Board for the ensuing year, at a salary of £160 per annum.

DEWSNAP, F. J., has been re-appointed Inspector of Nuisances to the Greasbrough Local Board.

EVANS, E. M., has been re-appointed Sanitary Inspector to the Holywell Local Board for the ensuing year.

GODSALL, Henry J., has been re-appointed Inspector of Nuisances to the Saltley Urban Sanitary Authority.

HATHAWAY, John, has been re-appointed Inspector of Nuisances to the Winslow Union for three years.

KIRK, James, has been re-appointed Inspector of Nuisances to the Whittington Local Board.

LIGHTFOOT, G., has been appointed Inspector of Nuisances for the Barry and Cadoxton Urban Sanitary District of the Cardiff Union.

LOACH, John, has been re-appointed Sanitary Inspector to the Handsworth Local Board, at a salary of £145 per annum.

LOFTHOUSE, W., has been re-appointed Inspector of Nuisances to the Wakefield Rural Sanitary Authority for three years, at a salary of £115 per annum; also Inspector under the Canal Boats Act at £5 a year.

MILNE, Joseph, has been appointed Assistant Sanitary Inspector for the borough of Partick, Glasgow, at a salary of £100 per annum.

NALL, J., has been re-appointed Sanitary Inspector to the Chapel-en-le-Frith Rural Sanitary Authority for twelve months.

NORTHCOMBE, J. W., has been appointed Inspector of Nuisances to the Taunton Urban Sanitary District, *vice* C. S. Webber, resigned.

PHENNAH, E., has been re-appointed a Sanitary Inspector to the Wrexham Rural Sanitary Authority.

ROBBINS, T. E., has been re-appointed Inspector of Nuisances to the Wisbech Rural Sanitary Authority.

ROBINSON, Thomas, has been re-appointed Sanitary Inspector to the Dursley Rural Sanitary Authority for one year.

RUTHERFORD, G., has been appointed Inspector of Nuisances to the Cowper Urban Sanitary District of the Tynemouth Union, *vice* W. Charlton, resigned.

SMALLWOOD, G., has been re-appointed Inspector of Nuisances to the York Rural Sanitary Authority, at a salary of £120 per annum.

SPEECHLEY, Soomes, has been appointed Inspector of Nuisances to the Whittlesey Rural Sanitary Authority.

THOMAS, T. L., has been re-appointed Inspector of Nuisances to the Builth Rural Sanitary Authority.

THOMAS, Wm. has been appointed Inspector of Nuisances to the Neath Rural Sanitary Authority, *vice* M. Tucker, resigned.

TREADWELL, William Johnson, has been re-appointed Inspector of Nuisances to the Brackley Rural Sanitary Authority, at £52 per annum for two years.

WHEAT, T., has been appointed Sanitary Inspector to the Darlington Local Board.

PUBLIC ANALYSTS.

COLWELL, James Kear, has been appointed Public Analyst to Bedford Town Council.

HEHNER, Otto, has been appointed Public Analyst for the County of the Western Division of Sussex.

MUMBY, Dr. B. H., has been re-appointed Public Analyst for the Borough of Portsmouth.

SURVEYORS.

CLARSON, H. J., has been re-appointed Surveyor to the Tamworth Rural Sanitary Authority.

TREADWELL, William Johnson, has been appointed Surveyor to the Brackley Highway Board, at a salary of £160 per annum, and allowed to keep his appointment under the Brackley Rural Sanitary Authority, *vice* W. Forrester, who has been appointed Assistant Surveyor to the Kent County Council.

WILLIAMS, Owen, of Colwyn Bay, has been appointed Surveyor and Waterworks Manager to the Aberdare Local Board.

CLERKS.

ANDREW, A. Studley, has been appointed Clerk to the Chard Board of Guardians, *vice* Henry Paull, resigned.

HULL, Alfred, has been appointed an Assistant Clerk to the Guardians of the Hackney Union, *vice* E. B. Boyd, resigned.

JARRETT, F., has been appointed Vestry Clerk of the parish of Wandsworth, *vice* E. E. Greville, resigned.

RESIGNATIONS.

BROWNING, J., Inspector of Nuisances to the Royston Rural Sanitary District.

BUTLER, Arthur, L.K.Q.C.P.Irel., L.R.C.S.I., L.M., Medical Officer and Public Vaccinator to the Evershot District of the Beaminster Union.

CHARLTON, W., Inspector of Nuisances to the Cowper Urban Sanitary District of the Tynemouth Union.

COATES, Mr. James, Clerk to the Guardians of the Wetherby Union.

COOPER, Walter, L.R.C.P.Lond., M.R.C.S.Eng., Medical Officer and Public Vaccinator to the 9th District of the Barnstaple Union.

EARLE, Leslie Meredith, M.D.Edin., M.B. and C.M., Medical Officer and Public Vaccinator for the Melbourn District of the Royston Union.

FITZGERALD, J. Robt., L.R.C.S.I., L.A.H., Medical Officer to the Stotfold District of the Biggleswade Union.

FORD, Arthur S., Assistant Clerk to the St. Olaves Union.

GARMAN, W. C., M.R.C.S.Eng., L.S.A., Medical Officer and Public Vaccinator for Wednesbury No. 1 District.

GARRETT, T., Surveyor to the Banbury Town Council.

GILES, Bernard Faraday, M.D.Durh., M.B., M.R.C.S.Eng., L.S.A., Medical Officer of Health to the Wem Rural Sanitary Authority.

GRAHAM, Dr., Analyst to the Lindsey County Council.

GREEN, Thomas, Inspector of Nuisances to the Spalding Rural Sanitary District.

GREENWELL, A., Inspector of Nuisances of the Thakeham Rural Sanitary District.

JAMIESON, Charles, M.B.Glasg., C.M., Medical Officer and Public Vaccinator to the Finchingfield District of the Braintree Union.

MANLEY, John, M.R.C.S., L.S.A., Medical Officer of Health to the West Bromwich Urban Sanitary District.

NONBURY, William, Inspector of Nuisances to the Leigh Urban Sanitary District.

SEMPLE, Jas. Robt., M.B.Glasg., C.M., Medical Officer to the East District and Workhouse of the Whitby Union.

STABLES, Walter Williams Godfrey, L.R.C.P.Edin., and L.M., M.R.C.S., Medical Officer and Public Vaccinator of the Heckington District of the Sleaford Union.

WATKINS, Harold Fuller, M.B.Edin., C.M., Medical Officer and Public Vaccinator of the 5th District of the Mansfield Union.

WHEAT, T., Sanitary Inspector to the Dewsbury Local Board.

YOUNG, Adam, L.R.C.P.Lond., M.R.C.S.Eng., Medical Officer for the Workhouse of the Sevenoa s Union.

VACANCIES.

MEDICAL SUPERINTENDENT to the London County Asylum, Colney Hatch. Salary £1,000 per annum, with a house supplied with planned furniture, coals, gas, milk, and vegetables. Candidates must not be over 50 years of age, and must be duly qualified to practise medicine and surgery, and must have had experience in similar institutions. Forms of application to be obtained at the office, where such forms, duly filled up and accompanied by not more than three testimonials, are to be delivered by April 23, addressed to the Clerk, R. W. Partridge, Esq., London Asylums Committee Office, 40, Craven Street, Strand, W.C.

JUNIOR HOUSE SURGEON.—There is a vacancy at the Bolton Infirmary and Dispensary for a Junior House Surgeon. Double qualification. Salary £100 per annum, increasing to £150, with furnished apartments, board, and attendance. Application to Mr. Kevan, Hon. Sec., 12, Acresfield, Bolton, by April 26.

MEDICAL OFFICER.—The Watch Committee of the City of Liverpool require a Medical Officer for the Main Bridewell, as a successor to the late Dr. Cavanagh. Salary £110 per annum, to include cost of medicines and medical appliances.

ASSISTANT MEDICAL OFFICER required at the Holborn Union Infirmary, Archway Road, Upper Holloway, N. Salary £100 per annum, with board, lodging, and washing. Applications to James W. Hill, Clerk to the Guardians, Clerk's Offices, Clerkenwell Road, E.C.

SECOND ASSISTANT MEDICAL OFFICER.—The Guardians of St. Saviour's Union require the services of a fully qualified gentleman to act as Second Assistant Medical Officer at their Infirmary, East Dulwich Grove, Champion Hill, S.E.

Appointment for a period not exceeding one year. Salary £100 per annum, with furnished apartments, board, and washing. Age not to exceed 26 years. Applications, endorsed "Applications for Second Assistant Medical Officer," should be forwarded to Howard C. Jones, Esq., Clerk's Offices, John Street West, Blackfriars Road, S.E., by April 24.

SANITARY MEDICAL OFFICER.—The Hendon Rural Sanitary Authority is desirous of obtaining a sanitary medical officer for their district, comprising the parishes of Edgware, Kingsbury, Pinner, Great Stanmore, Little Stanmore, and the rural portion of Harrow-on-the-Hill, comprising an area of about 19,000 acres, and a population in 1881 of about 14,000. Salary £100 per annum. Applications, endorsed "Application for Sanitary Medical Officer," to be sent in to W. A. Tootell, clerk, Edgware, by April 21.

HEALTH OFFICER required for the Rangoon Municipality. Salary Rs.600 per mensem, rising by annual increments of Rs.50 to Rs.1,000. Private practice debarred. Applications to J. Short, Secretary, Rangoon Municipality.

SANITARY INSPECTOR.—Wanted by the Carlton Local Board a Sanitary Inspector for the District of Carlton. One who had had previous experience preferred. Salary £30 per annum. Applications to Arthur T. Ashwell, Esq., Clerk.

INSPECTORS (2).—The Northamptonshire County Council require the services of 2 Inspectors under the Food and Drugs Act, 1875, and Weights and Measures Act, 1889. Must have passed the examination required by the Board of Trade under section 11 of the Weights and Measures Act, 1889, and obtained a certificate to such effect. Salary of each Inspector £150 and an allowance of £30 and £20 respectively for the Southern and Northern Divisions of the County for travelling and all other expenses. Must devote whole time to the duties. Applications to the Clerk of the Council, County Hall, Northampton, by April 16.

DRAINAGE INSPECTOR.—The Council of the Corporation of Croydon require a Building and Drainage Inspector in the northern part of the Borough. He must possess a thorough knowledge of building operations and drainage construction, and will be required to devote the whole of his time to the duties of his office. Salary 42s. per week. Further particulars may be obtained from the Borough Engineer, 8, Katherine Street, Croydon. Applications to be sent to C. M. Elborough, Town Clerk, Town Hall, Croydon, by Monday, April 21.

INSPECTOR OF NUISANCES.—The Corporation of Sheffield require an Inspector of Nuisances. Salary £2 per week, with uniform. Must hold certificate of Sanitary Institute. Applications, with testimonials, and stating age, to be sent to the Medical Officer of Health, 4, North Church Street, Sheffield, by April 28.

INSPECTOR OF NUISANCES.—The Town Council of the Borough of Cambridge are advertising for an Inspector of Nuisances for District No. 2. Salary 35s. per week, and uniform found. Must devote whole time. Applications, endorsed "Inspector of Nuisances," should reach the Town Clerk, John E. Ledsam Whitehead, Esq., by April 26.

CLERK AND ASSISTANT-MASTER.—The Guardians of the Holborn Union require the services of a person to fill the above offices. Must be single, and between 25 and 40 years of age; competent book-keeper. Salary £40 per annum, with board, lodging, and washing. Applications to J. W. Hill, Esq., Clerk's Offices, Clerkenwell Road, E.C.

LOAN.

OSSETT-CUM-GAWTHORPE LOCAL BOARD.—LOANS of £800 and £400. The above Board invite offers for loans of the above amounts, repayment to suit Lenders, either upon fixed date or six months' notice. Offers to Herbert Tallas, Esq., Clerk to the Board, 1, New Street, Ossett, Yorkshire.

DEATHS.

BIANCHI, Robert, M.R.C.S., L.S.A., Medical Officer of Health to the Board of Works for the St. Saviour's District.

CADDY, Henry, M.R.C.S., L.S.A., Medical Officer and Public Vaccinator to the Probus District of the Truro Union, and Medical Officer of Health to the Eastern District of the Truro Sanitary Authority.

HARRIS, Charles, M.D.St. And., Medical Officer of Health, Medical Officer and Public Vaccinator to the 2nd District of the Rye Union, and Medical Officer and Public Vaccinator to to the 8th District of the Battle Union.

MORTON, Richard Kay, M.R.C.S., L.S.A., Medical Officer to the No. 6 District and Workhouse of the Aylsham Union.

CONTRACTS.

SEWAGE DISPOSAL WORKS.

THE Sewage Committee of the Corporation of Bury invite Tenders for the construction of about 1,665 yds. 4 ft. 9 in. by 2 ft. 2 in. of Brick Interceptiug Sewer, together with manholes, junctions, branch sewers, drains, and other works in connection therewith, in accordance with drawings and specifications prepared by J. Cartwright, M.I.C.E., the Borough Surveyor.

Plans and specifications may be seen at the said Borough Surveyor's Office, where bill of quantities and form of Tender may be obtained.

Sealed Tenders, on the form supplied and endorsed "Tender for Sewers Roach Drainage," are to be sent to John Haslam, Town Clerk, Corporation Buildings, Bury, not later than April 23.

THE Hastings Rural Sanitary Authority invite Tenders for supplying about 25 tons of 6-in., 4-in., and 3-in. cast-iron water mains, delivered at Hastings Station.

Specifications and form of Tender may be obtained of the Surveyors, Messrs. Jeffery & Skiller, 5, Havelock Road, and Tenders, sealed and endorsed, are to be sent to Arthur R. Inskipp, clerk, 33, Elphinstone Road, Hastings, by April 16.

THE Streets Committee of the Commissioners of Sewers of the City of London will meet at the Guildhall on Friday, April 25, at 2 o'clock, to receive Tenders for the erection of a Scavenger's Depôt and Gravel Store in Upper Thames Street, according to plans and specifications to be seen at the Office of the Engineer.

Tenders are to be sealed and endorsed "Tender for Depôt," and to be addressed to Henry Blake, Principal Clerk, Sewers Office, Guildhall.

NOTES AND QUERIES.

Having for some time back been in the receipt of Queries appertaining strictly to sanitary work, and which it would be easy to answer without having to refer our correspondents to competent professional advisers, we have opened a column in which to register such Queries and Replies thereto as can fairly be expected from us; and our subscribers and readers are invited to make such use of this column as will tend to benefit themselves and the community. Both Queries and Replies will, however, be subjected, if unnecessarily long, to a strict curtailment.

BETTERMENT.

In your article entitled "Betterment" in the February number of your valuable RECORD you remark (page 384) as follows:—"In towns they have also now for many years been liable to charges for the construction of works of public utility, such as providing sewers or making new streets. In such cases the whole cost of the work is chargeable on the properties adjoining, although the inhabitants of other parts of the town derive some benefit from it." Pardon me for the liberty I take in inquiring under what Act or Acts of Parliament powers such as described by this quotation are conferred? Are they local or general Acts? And where and for what particular purposes have they been applied? Your kindly supplying me such information as I desiderate will much oblige

"A REGULAR READER."

[Generally these charges are imposed by virtue of the Public Health Act, ss. 150 and 257. Many towns have also further powers under their local Acts.—ED.]

VENTILATION OF TAILORS' WORKSHOPS.

I shall esteem it a favour if you will advise me what air-space per head should be required (as a minimum) to be provided in tailors' workshops. The workshops which I have in my mind are of medium size, occupied by 12 to 20 men, have no open fire-place, are ventilated by windows and ventilators of the simplest form, and are lighted by gas; one burner, on an average, to three men.

C. E.

[In every workshop which is fairly well ventilated there should be a minimum of 300 cubic feet for every worker during the day period for work, and when night comes on the minimum should be increased by at least 100 cubic feet. In workshops that are not ventilated, and especially in those of tailors where so much gas and coke are used, the health of workers could not be assured under the conditions above-named. To ventilate a workroom the ceiling should be at least 12 feet high, the fire-place should be open, Tobin's tubes should be inserted at intervals of 12 feet, and 6 feet high, with such a lateral system as would ensure the proper and constant interchange of free air necessary to constitute a healthy workroom, for it may not be known that a man expires 16 cubic feet of air per hour, and about one-thirtieth of this volume is carbonic acid. Gas-burners consume about 3 cubic feet of coal-gas per hour, and this quantity of gas renders about 3,600 cubic feet of air impure, therefore an ordinary 3-foot gas-burner uses up more air than three grown-up persons.—ED.]

ORIGINAL PAPERS.

THE DISPOSAL OF SEWAGE BY SMALL TOWNS AND VILLAGES.*

By CLARE SEWELL READ.

Now that the sewage question has run through the wild extravagance of its early days, and sewage has come to be regarded by all sensible people simply as a nuisance to be got rid of, rather than being in itself a mine of wealth, the solution of the problem has become an easier matter. The primary question is no longer how to extract the small amount of fertilising matter it contains, with the idea of making a fortune by sewage-farming, or a valuable artificial manure, but how to rid ourselves of the sewage that it may do the smallest amount of harm at the least possible cost.

Those are on the safe side who regard sewage as an unmitigated nuisance, from the first moment it leaves the house, until it eventually escapes into the sea. To sewer a large town often presents grave engineering difficulties; to properly sewer a scattered village is frequently an impossibility. Then the question arises, Are sewers necessary in our country villages? The sewage may pollute the river or watercourse into which it runs, but it is only dangerous when it poisons the water supply of the inhabitants. If the former pollution is extensive, riprarian owners can put Acts of Parliament in motion to restrain it; if the latter, it rests with the local authority of the district to remove the evil.

Now it is manifest that the most serious contamination must arise in those localities where the drinking-water of the village is derived from shallow springs. Where the water supply is deep, unless sewage escapes directly into the well, its percolation through 50, or even 20 feet of earth, must deprive the sewage of all its dangerous impurities long before it reaches the water-bearing stratum. Upon sewage farms, where large quantities of crude sewage have been poured for years, the 3 or 4 feet of surface-soil still retains its power of filtering the sewage, so that the water escapes clear and pure from the under-drains. But where there is a shallow water-bearing stratum ready to burst out on every hillside, and these land-springs form the water supply of the village, the danger of sewage contamination is serious and frequent.

Where no fear of polluting the water supply exists, attempts to sewer rural villages can hardly be justified. Not only is the expense great for a small and unequal sanitary gain, but it is seldom that the houses in a parish are so clustered together that all can be connected with the sewers. The means of flushing the drains are not always handy; and, unless sewers are properly flushed and ventilated, they become foul and offensive, and sometimes are blocked. For cottages, the dry-earth closet seems the most rational way of dealing with fæcal matter, and the house-slops can be easily emptied into a hole in the garden from which under-drains might enrich the subsoil, as recommended by the late Mr. James Howard. But earth-closets must be under constant supervision, and all slops must be rigorously excluded, or the closets soon become extremely filthy. Where the cottages in a village mainly belong to one proprietor, it answers well to have a man employed to remove once or twice a week the contents of the closet, and supply fresh earth; and if the sanitary authority favour the dry-earth system, there is no reason why they should not contract, or employ an officer for its superintendence and scavenging, in the same way that they now pay for flushing and inspecting the sewers within their district.

In treating of the disposal of the sewage of small towns and large villages, it is not necessary to refer in any detail to the construction or plan of the sewers themselves, but, rather, to the means employed to purify the sewage. Most of the attempts at village filtration are of the most primitive character. A grating to catch the flocculent refuse, and one or two tanks filled with stones, gravel, or sand—called by courtesy filter-beds—afford little means of clarification, much less purification. But they may be of essential service in removing the most unsightly rubbish and the grosser solids, which so often disfigure and discolour the stream which eventually receives the sewage. Filter-beds of charcoal, iron, ferozone, and such like substances, which receive the effluent water after it has passed through the land, may be extremely useful, and probably represent the perfection of sewage disposal.

The idea of small quantities of sewage being utilised for growing vegetables or common farm-crops other than grass, has been little favoured of late years. It is the curse of most sewage-farms that they have to deal with the largest volume of sewage when they want it least; but should the amount of sewage be in itself small, when it is most wanted there is scarcely any to be had. It is, therefore, found that osiers, or ash-poles, which require little attention, and grow away whether the beds are flooded a foot deep, or the sewage trickles down the carriers in intermittent driblets, are the best crops for sewage-beds. Osiers, no doubt, require the rubbish to be kept down when they are young plants, and in the early stages of their growth; but ash-poles will grow for years without any expense beyond cleansing the carriers and regulating the flow of the sewage—and that must be done, not for the benefit of the poles, but for the proper filtration of the sewage.

One of the evils predicted from the growth of osiers, was the certainty that their rootlets would speedily choke the under-drains. Although some osier beds have been irrigated with crude sewage for many years, the drain-pipes still run as freely as when they were first laid down.

Much difficulty has been experienced in finding out the localities in which villages have been sewered. Here and there, from more or less remote parts of the kingdom, tidings come that a small attempt at dealing with sewage has been most successful; but it often turns out to be some new chemical or mineral substance which is supposed to have done wonders in a filter-bed or settling-tank. For the most part, the rural sanitary authorities which have attempted to dispose of sewage have followed the main features of the irrigation practised in the Brixworth Union, Northamptonshire—a Union which bids fair to become as celebrated for the successful removal of village sewage as it has long been known for its judicious curtailment of outdoor relief, which in twenty years has resulted in a reduction of outdoor paupers from 1,707 to 38, and a decrease of its half-yearly expenditure in out-relief from £3,064 to less than £200.

As the object of thia paper is simply to record the

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attempts to dispose of sewage in villages, and in no way to describe the various systems of drainage employed, it will be quite unnecessary to go through the different parishes of the Brixworth Union in detail, or to minutely explain the construction of their sewers. Sir Robert Rawlinson was consulted upon the different plans, and all the parishes were sewered upon the sound engineering principles which he has so zealously recommended as chief engineer of the Local Government Board. Where it was possible, the closets of all the houses and cottages in the village were connected with the sewers, which are all constructed of glazed earthen-socketed pipes, varying from 6 to 12 inches in diameter. The old drains, channels, and ditches are still used for carrying off the land drainage and surface-water from the roads. Very few accidents of any kind have happened to the sewers since their construction. Of three blocks, one was caused by cocoanut shell, and another by a turnip; and if the presence of these articles in the sewers might possibly be due to accidental causes, the insertion of a horse-collar must certainly be classed among malicious and wilful obstructions. Beyond removing these impediments, very few repairs or alterations have been necessary, which shows how thoroughly well the sewerage-works have been executed in the Union.

In every instance the sewage flows, by its own gravity, to a deeply-drained plot of land, surrounded by a clay bank, to prevent any overflow. These filter-beds are generally planted with osiers, but some with ash-poles, which are more easily kept clean, and, since the decline in the value of osiers, may yield a better return. On the other hand, osiers are preferable to ash-poles, for the hoeing and cleaning they require stirs the surface, and gives better filtration. Moreover, the osier is a grosser feeder, having a better appetite for filth, and converting more of it into vegetable growth. The annual cuttings expose the surface to the purifying influences of the sun, light, and air. If the filter-bed is of clay, some cultivation is very important, as without it the land is liable to crack, and the flocculent matter to go straight down into the drains. But the land under ash-poles can be dug once a year, and, if very stiff soil, might with advantage be covered with some friable soil, road-scrapings, &c.

The sewage runs down a main carrier, and is diverted by the superintendent into the small channels which divide the beds, the only escape for the effluent water being through the deeply-laid under-drains. On the Brixworth osier beds, the quantity of solid matter deposited by the sewage has so raised the land that the top soil must be soon carted away. This deposit, although full of nettles and weeds, should be a capital dressing for grass-land, for it really contains as much goodness as the dried sludge which at some sewage-works is converted into artificial manure, and has been sold to ignorant and confiding farmers at £3 10s. per ton. The sewers are flushed out once a month, the sanitary authority providing a water-cart, and paying 6s. for man and horse when required. The whole of the sewers are under the management of Mr. W. Gilby, for many years the indefatigable inspector of nuisances of the Brixworth Union.

Considerable opposition was originally raised to some of these drainage schemes, that of the Brixworth sewerage costing the parish £128. Some dissatisfaction is also caused by the manner in which the outlay for these great sanitary improvements is charged; and Mr. Albert Pell, in the Annual Report of the Brixworth Union in 1879, somewhat justifies this complaint, for he says: "The law as it stands is regarded as inequitable, as it appears an improved value is conferred on one description of real property at the expense of another." This is quite true, but is a mere trifle when compared with the injustice of allowing realised wealth to escape its share of local burdens, which fall so oppressively upon the depreciated agricultural land of this country.

The sanitary necessity for sewering some of the parishes in the Brixworth Union was stated in a report from Dr. Thorne Thorne, who, in 1874, wrote that "the deaths from fever per 1,000 were, in the standard rural districts, 48; in Northamptonshire, 80; and in this particular union, 112." Dr. Thorne contended that "the mischief was traceable to cess-pools and old highway drains in porous soils allowing soakage and pollution of drinking-water which is mostly derived from shallow springs." The water-tight system of sewers, which has been carried out in so many parishes, has, happily, been the means of almost banishing fever from those localities. Less sickness has been followed by a diminished poor's rate; so the sewerage of the union may be said to be, not only a sanitary, but a financial, success.

The marked improvement in the health of this union, comparing the ten years previous to any sewage scheme being adopted with the ten years which followed its adoption, is thus described by Dr. Parsons in a later report to the Local Government Board. The information from the Registrar-General's annual and quarterly reports, "shows a gratifying decline of mortality amounting on their present population to an annual saving of about twenty lives, or, reckoning five severe cases of illness to one death, of one hundred severe illnesses with their attendant suffering and expense." With such testimony, how can anyone doubt that the money laid out on these village sewers has been well, wisely, and profitably spent?

The following table shows the cost of draining those parishes of the Brixworth Union where a complete system of sewers has been adopted; there are other villages which have been only partially sewered:—

Name of parish in the Brixworth Union.	Population in 1881.	Date of Works.	Cost, including land.	Extent of land irrigated.	How cropped.
			£		
Brampton Chapel	233	1880-1	407	Half an acre	Osiers
Brixworth	1,183	1876-8	832	One acre	Osiers
Harlestone	569	1878	750	One acre	Ash-poles
Moulton .	1,483	1874-8	980	One acre	Osiers
Spralton .	817	1886	810	One acre	Ash-poles
Walgrave .	603	1874-8	673	One acre	Osiers

The sewering of Whissendine, a village of Rutland containing 734 inhabitants, was completed last year, at the following cost:—

	£
Sewering Whissendine village (including £140 for outfall and osier bed—1 acre)	849
Engineer and clerk of works - - -	126
Compensation to occupiers of land crossed by sewers to outfall, about - - -	25
Total - - - -	£1,000

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The inspection was made after a very heavy rainfall, when the Whissendine brook, celebrated in many hunting annals, was overflowing its banks. The flood had just reached the lower part of the freshly-planted acre of osiers, upon which the sewage is delivered, but none of it escaped unfiltered. The fall of the main sewer from the village to the filter-bed is 1 in 400, and there are two flushing-tanks from spring drains. The inspector of nuisances of the Oakham Union is the only officer employed, but a village superintendent would appear almost a necessity.

Ashwell, also in Rutland, with a population of about 200, has been lately sewered. The first contract was for £352; but an extension of the chief sewer, and a larger filter-bed, cost another £140. The main drain is easily flushed, from the brook which flows through this village, by means of a sluice-door; but there is only one filter-bed, its three compartments being filled with stone and gravel—so that even the clarification of the sewage is by no means perfect.

The town of East Dereham, Norfolk, contains about 6,000 inhabitants, and is well and cheaply sewered. The sewage flows by its gravity into a valley, and empties itself, without any preparation beyond a small settling-tank and grating, upon four acres of osier beds. These four acres filter all this raw sewage, and it is only after very heavy rains and thunderstorms that there is any overflow from the sewers into the brook, and that is mostly surface-water. The chairman of the board—a gentleman of great practical experience, who devotes his leisure to the zealous performance of the honorary duties of his office—considers that six acres of osiers would be ample to purify the largest volume of sewage for many years, even if the town should considerably increase; and he is satisfied that, with the exception above stated, the sewage-effluent is now perfectly clear and innocuous. The common osier is being discarded for the "brown Holland," a variety which is much tougher, and sells better than the ordinary sallow. No produce has come down in price like osiers. A few years ago, £10, and even £15, per acre was made of one year's growth. At Dereham, the two years' crop of 1887–8 off four acres realised only £12; but this year's growth has fetched £10, which is still a poor price. A few mangel are grown every year on the margin of the stream. The services of one man are employed for about three-fourths of his time to direct and control the flow of sewage, and some extra help is needed to clear out the channels and keep down the weeds and rubbish before the osiers grow freely in the spring. The whole of the land was drained, 3 feet deep, before the osiers were planted, and the drains work well, and have never been any trouble from the growth of roots during the eight years the beds have been at work.

The cost of the sewerage of Dereham in 1881 was as follows:—

	£	s.	d.
Contract for pipes, manholes, excavating and laying - - -	3,454	14	3
4a. 1r. 2p. land for irrigation, surveyors, and arbitration - -	794	12	1
Draining and preparing the ground	473	10	8
Compensations for disturbance -	88	7	10
Engineer's commission - - -	100	0	0
	£4,911	4	10

In addition to this, there were expenses exceeding the amount authorized to be borrowed by about £300, which cannot now be readily ascertained, and which were subsequently paid out of the rates. Excepting a few of the outlying portions, the whole of the town was sewered, to the extent of about two hundred acres. The sewers are all of glazed earthen pipes, varying in size from 9 to 18 inches, in gradient from 1 in 600 to 1 in 17, and in depth from 6 to 23 feet; and the total length is nearly four miles. There is a manhole, or lamphole, at every intersection or curve, the pipes being laid in a true line between these for examination. These holes were all (67) originally left open for ventilation at the road level, but had to be closed; and in 1887, two sewer-gas destructors were put up, and several simple ventilating-pipes inserted at ends of the long sewers, or important bends, and there has been no trouble since. At the end of every sewer, provision is made for flushing by a 3-inch sluice-valve from the adjoining water main, as the rain-water was kept out of the sewers as far as practicable. It may not be too much to say, that the sewage scheme of East Dereham might—for its economy, utility, and success—compare favourably with any small town in Great Britain.

The populous village of Castleacre stands upon the brow of what is regarded in Norfolk as a high hill. The road down the main street is very steep, and it was difficult to keep the highway in repair, by reason of the rush of surface-water; while the practice of throwing house-slops into the road-gutters was fearfully offensive. To remedy these two evils, a paved channel has been formed for the surface-water, and a sewer made down the street, which receives all the house-slops. There are no water-closets in the village, and the sewer empties itself into a hole in a meadow. No effort is made to utilise the sewage—which cannot be of much manurial value—and it soaks into the surrounding soil, promoting a vigorous growth of nettles. Once a year the hole is emptied of its solids by means of a chain-pump. The sewer, as occasion requires, is flushed by watercart, the three principal farmers in turn supplying a horse gratis. Since a lofty ventilating-shaft has been inserted, there has been much less unpleasant odour from the sewer. A parish inspector has been appointed, at a salary of £10 a year, whose duties are to superintend and cleanse the sewer and all gulleys and traps, and the construction of any branch drains which have to be connected with the sewer. The total expenditure amounted to £280. The cost of engineering, which presented no difficulties whatever, was £50—a marked contrast to the engineer's commission of £100 at Dereham, where the sewage scheme cost over £5,000. The clerk of the works and Local Government Board inquiry cost £30, making up £80 for outside expenses—a pretty heavy percentage upon a total outlay of £280. And it is possible that this engineering skill, which rigidly excludes the surface and roof-water from the sewer, has been misapplied in this village. There is ample capacity for the largest volume of rain-water, and as no use is made of the sewage its dilution can do no harm; while every shower of rain would help to cleanse the short sewer, and render the necessity of flushing less frequent. The flushing apparatus has a basin, or reservoir, which does not tip until it is full. It has hitherto worked fairly well, but, if not constantly attended to, it may soon get out of order and cease to act. Those contrivances cannot be too simple.

A cheap and apparently successful example of village sewage-irrigation is furnished at Kebworth

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Beauchamp. The cost of the sewage-works and settling-tanks was only £120, and the sewage irrigates five acres of grass-land, held on a twenty-one years' lease at £30, and is sub-let to a yearly tenant for £24 10s. No complaint has been made of the sewage being at all offensive since the settling-tanks were added, three or four years ago.

The inclusion of a town of the importance of Henley-on-Thames is hardly within the scope of this paper; but hearing that a new and greatly improved system of sewage was just started there, it seemed advisable to inspect it. The engineering feat of taking the sewage to the lowest possible point, and then pumping it to the summit of the nearest hill, has been successfully accomplished at Henley. Shone's compressed-air system is worked by a 27 horse-power steam engine, and the sewage is lifted 120 feet, and delivered into settling-tanks. It then irrigates about four acres of land, 1½ acres of which are planted with osiers, and the rest devoted to the growth of mangel and Italian rye-grass. There is no outfall, the water percolating through the deep strata of the upper chalk, and being seen no more. But the land is already supposed to become clogged, and the sludge is a nuisance; so the town council have decided to adopt the treatment of Messrs. Jagger & Turley, of Leeds, that burns the house-refuse to a carbon, which is to be employed in the deodorization of the sewage, and for the more rapid deposition of the sludge on the settling-tanks. Then the effluent passes through a filter of carbon and cinders, by which time the sewage becomes "so clear and odourless," and is of such a "high standard of purity, that it might be turned into any river." But it is to be further improved—if that is possible—by irrigating the four acres of land; so the sewage of Henley (if it ever does reach the Thames after its long subterranean passage) ought certainly to be the purest effluent in the world.

Having now recorded a few successful examples of the disposal of sewage in some towns and villages, it is hardly necessary to particularise those sanitary authorities where common sewage-farming is practised on a small scale. Italian rye-grass is the only crops to which raw sewage can be directly applied with any certainty of success; and the introduction of silos has made the growth and disposal of such herbage comparatively easy. The rapid growth of roots and vegetables can be enhanced by sewage-irrigation: but the sewage had better fertilize the ground during the winter than be applied direct to the plants, except in dry seasons. To grain of all kinds, the flow of sewage invariably does much more harm than good. In the rural districts, there ought seldom to be any great difficulty in obtaining land for sewage-irrigation, though many owners, as well as their tenants, have a strong objection to parting with an acre or two for this purpose.

There are serious impediments in populous urban localities to sewage-irrigation, the securing of suitable land at a moderate cost being generally the crowning difficulty. In these localities, the different modes for precipitating, deodorising, and clarifying the sewage, by the aid of settling-tanks, chemicals, &c., may be the only means for preparing the sewage-effluent for its reception into the nearest river or stream. But, the less that is done with sewage in purely rural districts before it is applied to the land, the better. It may be well to take out the floating rubbish and the heavier solids by means of a small tank and grating; but even this is not necessary for a village filter-bed where osiers or ash-poles are the crop grown. It is necessary to keep the sewage moving, allowing none to stagnate for any length of time—and then there is little effluvia from the roughest irrigation. When once a proper system of sewers has been approved in a rural district by the Local Government Board, the employment of skilled engineers with elaborate plans, sections, and clever inventions, generally leads to a heavy outlay, without much corresponding benefit. A competent, practical surveyor, who can take levels, lay a drain, and make good a roadway with a strong gang of skilled drainers, will be all that is required for sewering most villages, and even some small towns.

WATER-WASTE.—In April last Mr. O. J. Kirby, C.E., late of the Devonport Waterworks Company, became the engineer and manager of the Batley waterworks. At that time the Batley water supply was supposed to be in a good workable condition, but the change in the management has proved that this was very far from being the case. Mr. Kirby found that there was considerable underground waste, and took measures to stop it. The average daily consumption for trade and domestic purposes having been ascertained, sufficient water was kept in store to last for six months, and all water coming into the town in excess of the daily average was treated as surplus water, and disposed of to the manufacturers at a price less than the cost of pumping either well or "beck" water. The means taken to prevent the underground waste resulted in a large increase of surplus water which, when sold at the reduced price, realised more than £2,000 a year. This was effected without the aid of the "Deacon" or district recorder or meter, the inspectors using only a dynamic stethoscope, the invention of the manager. Mr. Kirby has recently been asked by the water committees of two other corporations to examine the distributing arrangements of their water supplies, and to advise them as to the best means for detecting and preventing waste.

THE KOLA NUT.—A paper, by T. Christy, F.L.S., M.S.C.L., has recently been read at the Balloon Society, on the African kola nut, concerning which many remarkable statements have recently been published. The lecturer stated that the kola nut is held in great respect by the natives of the Western Coast of Africa, on account of its wonderful stimulating and sustaining powers; the nut is ground into a fine powder and carried about the person during long journeys, when often the only sustenance consists of a "chew" of this kola; thanks to it, many have been able to stave off thirst and hunger, while others declare that after a severe day's work or marching, nothing so revives the system as a kola nut. As a basis for a beverage, the analysis published comparing the nitrogenous principles, chemically defined and crystallizable, kola takes precedence over tea, coffee, and cocoa, while owing to the almost entire absence of tannin in it, it does not injure or impair the digestive organs. The stimulating tonic and sustaining powers of kola are mostly due to the caffeine, of which it contains over 2½ per cent., and sufferers from indigestion, nervous or bilious headaches, will hail with satisfaction a beverage which they can drink as a substitute for tea, coffee, or cocoa. The lecturer pointed out the advantage of this nut to sportsmen, athletes, brainworkers, during the times when they are straining their powers of endurance, and said that from the accounts given kola is likely to prove not only a great rival to tea and coffee, but also a drug, substituting the ordinary run of tonics and stimulants. Planters in the tropics having low-lying marshy lands would, he said, find the kola tree a profitable product, yielding as it does, at full maturity, about 1 cwt. of nuts per annum. The flowering and fruiting takes place simultaneously twice a year, so that there is presented the curious sight of a tree bearing fruit and flower at the same moment.

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PLUMBERS' WORK AS APPLIED TO THE DUTIES OF SANITARY INSPECTORS.*

By A. E. ADAMS, R.P.C., Assoc. San. Ins., Inspector of Nuisances, Wood Green, N.

IN dealing with the subject before us, I hardly think it would approach completion without a few words on plumbers and sanitary inspectors; these two classes of men greatly resemble each other in one particular, *i.e.* they have been and are greatly maligned by the British press, they are both voted as a nuisance, although not coming under the Public Health Act; robbers and various other choice epithets are not considered too strong to use towards the plumber and sanitary inspector, yet, under the present system of living, no two classes of men are more useful in their way. Who has not read the various pieces of poetry slandering the plumber and his craft, who has not read the scathing articles written on and against the sanitary inspector, about his neglect of duty, and why "ratepayers pay the wages of men who do nothing but shirk their duty and get paid for it"; this and much more is written about us poor mortals who help, though perhaps not in a very great degree, to reduce the death-rate of our urban and rural districts. However amusing it may be to read the poetry composed on the plumber, it is very annoying for a good workman to hear his craft libelled in the way it is and has been; but perhaps we have not far to seek for a reason. The work executed, or the greater portion of it, is hidden away in ceilings, behind casings, under floors, &c., so that when the bill is presented for payment there is very little to show for the time, labour, and material charged for. No doubt unprincipled plumbers have made gain by this fact, and charged for material never used, or it may be brought about by the fact that often when a plumber is called in to do some repairs, he has to pull down half a wall, or tear down a long length of casing, through no fault of his own, but because when the pipes were laid they were given to the cheapest contractor, who naturally laid his pipes so as to take shortest length and the shortest time to lay, without any regard for the repairs to follow, so that the present plumber is very often blamed for the sin of his fathers. The sanitary inspector is often maligned by people who are quite unaware of the duties he has to perform, but because they see him walking about apparently doing little or nothing, they imagine he has, to use a vulgar expression, "a fine tack"; but perhaps the greatest cause of the plumbers' trade being brought into such disrepute is the "handy-man" of the landlords and agents who have the care of property. Not only does he bring the plumber into disrepute, but he is the bane of the inspector's life; to-day he is a plumber, to-morrow a painter, the next day a slater, and so on; like the colour-changing chameleon, you never can be sure under what guise you next see him. What a blessing he is to his employer! He can dab a bit of mortar on an open drain, he can hang a sash, he can patch a water-pipe; and what a knowing chap he is, he can just do as much work and no more, on a "notice job," that the sanitary inspector cannot proceed against his master. It is these men who have brought discredit on plumbers' and everyone's work. My advice is, beware of the handy-man. Again, botched and bad work is often due to the very low price paid for having work done—a job often has to be done according to the price given, that price being quite inadequate to have a good and thorough job.

We have good hopes that in a few years time jobbery will be done away with in plumbers' work, for the Worshipful Company of Plumbers are extending their crusade all through the country, and every man professing to be a plumber will have to produce his certificate of registration. This ought to be good news to us as sanitary inspectors, for we are greatly allied to the plumbers' craft, and when we order work to be done we shall be sure that it is carried out by men who have proved their competency as regards the workmanship, although it may not be done in a scientific manner. Thanks to the City and Guilds of the London Institute, who are trying to teach our plumbers not only the way to do their work in a workmanlike manner, but also the scientific way of doing such work, and the reason why it should be so done. When the plumber has reached the stage of perfection aimed at by these kindred institutions, we shall find our duties considerably lightened; but there is not only much to be done in the way of technical education for the plumber, but there is room and great room for technical education in the sanitary inspector, and the best technical education we can have is that of plumbers' work. We ought to be thoroughly conversant with every detail of the work we take in hand; that some of us are not conversant with details I feel perfectly assured. I could give numerous instances to prove my assertion, but it would neither be fair or just, and beyond the mark of the subject before us. Just to show you what I mean by detail, I will cite one instance. A friend of mine a short time since had occasion to consult an inspector (of many years experience) with regard to a pan water-closet. The nuisance complained of was a foul smell from the aforesaid water-closet, caused by the water, every time the closet was flushed, running through the hole in the iron container (made for the lever of the pan to pass through) and lodging in the lead tray or safe; the remedy given by this learned inspector was to pour molten lead into the opening. Had this course been pursued, the plumber might still be pouring molten lead, and be no nearer the remedy. But he tried the true remedy, and I believe it was effectual, viz. a little putty and paint applied in a workmanlike manner.

Having thus far tried to show how nearly we are allied to plumbers and their work in a part of our duties, I will endeavour to deal with a few details in which plumbers' work bears directly upon that part of a sanitary inspector's duties where he has to examine, condemn, and refix drains, water-closets, baths, &c. I consider our first and chief duty is the prevention of disease; when disease appears, to trace its source, also to remedy the cause (if possible), so that it may not recur again. In this duty we are constantly brought into contact with plumbers' work in the shape of waste, soil, rain-water pipes, drains, &c. Although the latter may not be, strictly speaking, the work of the plumber, yet on many large and good jobs the plumber is held responsible, and has the superintending of the laying of the drains; especially is this the case where drains of this kind have to be brought to meet his soil or waste-pipes; at any

* Read before the Members of the Association of Public Sanitary Inspectors of Great Britain, North-Western District, November 16, 1889.

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rate, a plumber ought to be able to know what size drain his pipes will require, and why such size.

Before we proceed any further, I think we ought to consider what system of drainage is best, viz. the "trap," or the "trapless system." In a very able paper read before this Association in September, 1888, a gentleman gave as his opinion that the latter was the perfection, or, to be more correct, the acme of perfection in house drainage. I have my doubts about this matter, for reasons which I will try to explain. I do not wish or intend to set up my knowledge or experience, which are both very small, against the knowledge or experience of the reader of that paper, but there were one or two points not dealt with which I think come entirely within the subject of my paper. In the first place, the "trapless system" is a misnomer, for a trap is used to intercept or disconnect the drains from the sewer; secondly, I think the great objection to it is that there is no check to prevent the disagreeable odours, even if nothing worse, of the fouling of the soil, waste-pipes, &c., from entering the house. Experience seems to show, that be the waste-pipes of lead of the best workmanship, laid with the greatest care, all burrs and sharp bends avoided, in fact, a perfect job, so far as the making and laying of the pipes is concerned, in a few years time, if not before; there will be complaints of disagreeable smells arising from the scented or other soap which has congealed to the sides of the bath and lavatory waste-pipes, or from the soil which has found a resting place on the sides of the soil-pipe. For the first few months all will go well, but by degrees the smooth bore of the pipe—to use a plumber's phrase—would be "eaten into," *i.e.* the water and air acting alternately on the lead would have a chemical effect, causing the smooth bore to become rough; then, instead of cleansing themselves, they would become more and more fouled. This is what suggests itself to me if the pipes were of lead. But, if the pipes were iron, it seems to me—from what I have read—that they would become foul in a much shorter time. An experiment was made in the room by the same gentleman to show that sewer air will pass through any number of water barriers; this seems to be a greater reason why the "trapless system" should find little favour. I and, I am sure, all of us are open to conviction, and if any gentleman in the room will try and show us, from experience and otherwise, that the "trapless system" is the best, we will use our poor influence to bring about this "acme of perfection." With regard to the "trap system," I think the old fallacy that because a pipe is trapped, therefore there can be no danger, is fast dying, else why disconnect soil-pipes and waste-pipes at the foot. We claim for traps that they keep out any sewer-gas that may escape, and certainly they keep out any disagreeable odours of soap and soil that may lodge in the pipes. If the soil and waste-pipes are well and properly ventilated, there can be no danger of a pressure upon the traps, and if the traps are regularly flushed out, there can be no danger of the water in them becoming foul. No doubt there is much to be said for and against both systems, but on these I do not intend to enter; it is too large a subject for a paper like this is intended to be.

The trapless system.

Having thus briefly touched upon the trap and trapless systems, it devolves upon me to say something about traps in general. Trap-making is one of the great arts in connection with the plumbers' handicraft. In many large shops they keep what are called "bench hands," who are engaged upon nothing else but the making of traps, bends, &c. Traps and trap-making is a part of plumbers' work which has a direct bearing upon a portion of our duties, for how often are we called upon to examine the traps of a house where typhoid or diphtheria has made its appearance. Perhaps in the whole history of sanitary matters no article can be found which has more perplexed the British householder than the article known as a trap. Each inventor, vendor, and fitter-up, has lauded some such contrivance. The essentials of a good trap are, that it should be self-cleansing, that the water should be changed every time of using, that it should be free from any working parts likely to get out of order or become fouled, that it should hold enough water to prevent the escape of any noxious vapours, and not too much water surface exposed to the air. For ordinary purposes the lead **S** or **P** trap, properly made, fulfils all the above conditions. No doubt this is the reason why patents of various other sorts find so little favour. There has been put into the market cast and drawn lead pipes of the shapes mentioned, but it has been found that they will not last as long as the hand-made trap. For some reason or other they collapse when placed under sinks where hot and cold water is thrown down; the heat seems to make them collapse completely. Then there are other makes of lead traps in the market, *e.g.* the old **D** trap which we rightly condemn for reasons upon which I need not dilate, and yet the old **D** trap has its good quality, which is such a good one that it has been produced in a new form, and finds much favour in the south, I mean the "geometrically formed **D** trap." It is almost the same shape as the old **D** trap, but so constructed that it conforms to the requirements of a good trap. The good quality of the **D** trap is that it is not so easily syphoned as the pipe trap: this, when a number of water-closets or sinks are fixed on a length of pipe, is a great consideration. This syphonage can be obviated to a great degree by fixing a number of relief (or ventilating) pipes; but in every case the fixing of these is an impossibility. I need not enter into the merits and demerits of the different kinds and makes of traps. We are all familiar with Buchan's, Bower's, &c. Our duty lies not in the making of the traps, but in the fixing. I do not for a moment wish to imply that we ought not to know the advantages and the disadvantages of the various makes of traps, for it ought to form part of our duty to acquaint ourselves with all the different forms and makes. With regard to the fixing of traps (for the present I exclude water-closet traps), the trap ought to be fixed perfectly level, or on such a slope that the water seal is not too much diminished or done away with altogether. It ought to be fixed as near the bath or sink as can be. Sometimes we get complaints of unpleasant smells from the fact that the trap has been fixed too far away—perhaps two or three feet away—from the inlet, leaving this length of fouled pipe to cause the smell complained of. This happens most often when a "running, horizontal, or **U**" shaped trap has to be fixed. For the convenience of making the joints, the plumber will leave two or three feet more pipe than he has need to do. This kind of trap is rarely used where a **P** or **S** trap can be fixed.

Traps.

I think it will be obvious to us that a trap is better if made in one piece, but as they take a longer time

in making, they are more expensive, consequently we generally find traps made in two pieces and soldered together. The great art in trap-making is to get the lead equal in every part; there is a tendency for the lead to get thin at the edges and thick in the centre. If a trap is fixed in this state the hot water will cause it to expand; the cold water to contract, and the trap will give in the weakest or thinnest place, viz. the seams. No doubt we have seen traps that have given way in this manner. Another reason for traps giving way at the seams, is the galvanic action set up by the two metals used in the solder, and the water and air acting upon them alternately, so that when we are examining lead traps we ought to carefully examine the seams, for although the defect may only be enough to allow a drop of water to escape every minute, yet that drop will cause the trap to become unsealed.

Now, a few words on water-closets and the fixing of them, for it is in this part of our duty that we need a good knowledge of plumbers' work. The first thing we require to know in the alteration or carrying out a system of the disposal of fæcal matter by the water carriage system, is what kind of a water-closet apparatus we are going to fix. There are such a number of "perfect sanitary closets" that the difficulty is to pick out the most perfect. The valve water-closet finds great favour with many of the leading sanitarians of the day; there is no doubt it possesses advantages over many of the water-closets now put into the market, but there are several drawbacks to its general use, *i.e.* it is too expensive for common use; there are too many working parts about it, and it is not so cleanly as the earthenware; therefore, I think we can divide water-closets into two divisions, viz. the wash-out (manufactured in one piece) and the hopper and trap. Personally, I have great objection to the wash-out. It offers, to my mind, several objections; first and foremost, it is not as clean as it might be. I have taken particular notice of several that have been fixed, and I find that the back part of the outlet of the basin is oftener than not covered with filth. Several have told me that this is due to inefficient flush, but to my mind it is due, not to the inefficient flush, because I have noticed that it is not only in the back and side flush wash-out, but in those with a flushing rim where the water drops direct on the part complained of, but it is due to the water not being able to scour the back part of the trap. Another drawback is that if it is used as a urinal, as a water-closet ought to be used—for urinals are objectionable in private houses—the urine trickles over the basin and causes not merely the staining of the basin, but in time an objectionable odour; this will be especially noticeable if the closet is used by a number of females. Again, if the water-closet happens to become choked, the whole apparatus has to be taken up to unstop it, and I can tell you from experience that it is anything but a pleasant job. In the hopper and trap none of these objections offer themselves, providing we get a good form of basin with a good scouring flush; the best I have seen in the market was a pattern made by Dodd (late of Cable Street). The hopper and trap can be used as a urinal if fitted with an earthenware top, without any fear of objectionable odours arising therefrom, for it can be scrubbed every day with a brush, and each and every part can be so cleansed if the seat is hinged so as to allow of it being raised for this purpose. I assisted to fix this form of water-closet in the Hospital for Women, Shaw Street, and they gave the greatest satisfaction. Now, as to the mode of fixing water-closets in general, the soil-pipe is the first part to be fixed; this ought to be fixed outside the premises, disconnected at the bottom by a trap made specially for that purpose, and carried by a continuous line of pipes to a safe distance above the roof. The branch-piece that attaches the water-closet to the soil-pipe ought to receive our particular attention, for I am sorry to see many plumbers using the iron branch-piece; this branch-piece is too short to receive the outlet of the earthenware trap, which means that a piece of lead pipe has to be inserted into the iron socket and over the outlet of the trap, making two joints in place of one, and one of these joints buried very likely in the wall. This joint being made with putty or red-lead is apt to crack or break; if this happens we have the whole fumes of the soil-pipe escaping into the house, and where the soil-pipe is not disconnected, sewer-gas finds only too ready an entrance.

Water-closets.

Let us discourage, as far as we can, the use of iron branch-pipes; the branch-pipe ought to be made of lead, with an arm sufficiently long to reach the earthenware trap. This branch-piece is better made of three pieces of lead than soldered on to the perpendicular piece, as is most common, for a reason which I will give later on. The joint between the earthenware trap and lead ought to be fixed by means of a lead flange, bolted on to the flange of the trap, packed with red-lead, paint, and tow. The joints of the soil-pipe, presuming them to be iron, ought to be rusted together, which rust is made by mixing iron filings, sal-ammoniac, water, and a pinch of sulphur; the joints are packed with tow, hemp, or rope; the rusting is then driven tight into the joints by tools made specially for the purpose. Before the trap is finally placed in position, it ought to be tested as to whether it is a trap, for I remember a large house being fitted up with new sanitary arrangements, and the last state was worse than the first—owing to the water-closet traps being no traps—for when the job was done it was discovered that the water seal in the water-closet traps formed no barrier to the escape of sewer-gas, and new water closets had to be substituted at the cost of the firm carrying out the work. Various cisterns are used for the various patterns of water-closets, but perhaps the best is the simplest form of syphon system we can get, for the reason that persons very often, when using a water-closet, neglect to hold the handle long enough to ensure a sufficient flush. In making the selection of a cistern we ought to try and get a ball tap that will allow of the cistern being filled as quickly as possible after it has been used. If we get a slow-filling cistern, the probability is that the next time the water-closet is used, there will only be a partial flush. The cistern ought to be fixed, if possible, directly over the water-closet, so as to allow the full weight and force of water to cleanse the basin and trap; if we cannot get above four feet of a drop from the bottom of the cistern to the basin, a 1½-in. pipe ought to be used; if over four feet, a 1¼-in. pipe will generally be sufficient. There is a great knack in the way the flush-pipe enters the basin so as to obtain a good scouring flush. I cannot enter into the various methods employed, or the various shapes the mouth of the pipe is made to ensure such a flush, for their name is "legion," except to say that cork or wood should *not* be employed, for in time these temporary methods will

come out of place, and the flush perhaps be worse than ever. The putty joint is made as follows:—The arm of the basin and the flush-pipe is painted just round the arm; the putty is then laid round the two, over this is carefully wrapped a piece of rag, which has also received a coat of paint, and then to bind the whole together a long piece of string is tied in a peculiar manner known only to the craft. The joint is thus made, and may receive, if thought necessary, a coat of paint, which will tend to bind them all together.

A few remarks on the water-closet branch-piece and then I have finished. I stated that the branch-piece was better made out of three pieces of lead and soldered together than the branch-pipe soldered on to the perpendicular soil-pipe; but even this plan is better than an air-pipe taken from the top of a bend—the first-named plan is the best for several reasons. (1.) We get the full bore of the pipe both for the soil and air-pipe. (2.) There is no chance of any solder to form a burr or projection into the pipe. (3.) The danger of allowing the branch-piece to socket into the perpendicular pipe too much, or the air-pipe to socket too far into the soil-pipe is obviated. A few of the mistakes that may occur—unless the greatest care is exercised—in the two last-named systems of branching air-pipes on to soil-pipes are: the solder in making the joint may run inside and form an obstruction to the soil and paper; the branch-piece may be socketed too far into the perpendicular pipe, and so allow an accumulation of filth to gather; the branch-pipe may get moved from its angle before soldering, and thus cause a bad joint at its upper end. Those of you who know the mode of getting the angle and fixing these pipes will understand what I mean. The soldering of the air-pipe on to the top of a bend coming from the water-closet is the worst plan of all. Oftener than not, the top of the bend is only opened out to 2½ or 3 inches diameter, then a 4-in. socket is planted on the top of the opening and soldered, so that really we only have a 2½ or 3-in. air-pipe. Again, this socket-pipe may be lowered too far into the bend, thus forming a barrier to the passage of the soil, and if it does not actually cause a stoppage, it allows the accumulation of filth, which is far from desirable.

There are several items I would like to have pointed out to you in connection with this part of my subject, but I think I have said enough to show you that there are many small details which we would do well to study.

THE prizes offered by M. Bischoffsheim, of Paris, for essays on school games, attracted 60 competitors. Dr. Fernand Lagrange and General Lewal have each been awarded 1,500f., and among the other winners is M. Delbos, of the Naval School, Dartmouth.

DRAYCOTT SEWAGE FARM.—The sewerage works and sewage farm are now completed at Draycott, near Derby. The sewage has been turned on the farm, and everything appears to be acting very satisfactorily. This scheme may be regarded as a sample of what may be done in sewage disposal for a country district of 1,200 inhabitants. Members of local authorities, or others interested in sanitary work, may see the farm at any time. The land is six acres in extent, and it has been properly drained, levelled, steam scuffled, and laid out with carriers. The sewers are flushed automatically every twelve hours with brook water. The engineer to the works is Mr. W. H. Radford, C.E., of Nottingham, and the contractors are Messrs. Holmes Bros., of Nottingham.

DRAINAGE AND VENTILATION TO DWELLING-HOUSES.*

By F. ROTHERA, Surveyor to the Sowerby Bridge Local Board.

IN choosing the subject of "house drainage," &c., for my paper, I have done so not with the object of laying new matter before you on the subject but only to point out what, in my opinion, ought to be more closely studied, and effectively carried out by every person engaged in this important part of sanitary development.

Subject of paper choosing.

The question now before you is occupying the attention of the public at the present time, perhaps, more than it ever has, and it is of the highest importance that we, whose duty it is to carry into effect sanitary matters affecting this subject, should be early and skilfully acquainted with the best and most efficient methods with which to discharge this most important part of a sanitary inspector's duty to the public service.

Subject of paper occupying the public attention.

I think it is an indisputable fact that knowledge derived from careful experience is mostly reliable, and together with a sound theory is productive of satisfactory results in almost every branch of labour; and in view of this I have often felt impressed, since I became a member of this Association, that if the various contributed papers read before the Association were put into the hands of members previous to the reading, greater benefits would be the result both to reader and hearer, and would also add to the usefulness of the services rendered by every inquiring official.

Practical and theoretical experience.

Drainage is an item the importance of which is too frequently only equalled by the neglect it suffers, and no matter how well a system may have been thought out, in many cases the carrying out of the work simply means burying so many pipes and their connections without even a funeral card to denote the burial-ground and the date of the interment. A fig for the consequences! they come afterwards, when "the sexton who performed the duty and is generally remarkable only for his great strength and stupidity," is most likely at a safe distance, still carrying on his scientific operations for the poisoning of humanity, and I speak from experience when I say that, unless you absolutely "stand over" the men during their work, your drainage will be a failure. It ought not to be so, but such is, nevertheless, the case. From this cause the great necessity of exercising the most vigilant supervision over this branch of an inspector's work will be apparent. The importance, then, of good house drainage cannot be over-rated.

Necessity for a strict supervision of drainage.

"The lamentable records of mortality from preventible diseases caused, in many instances, by defective sanitation, point out the great importance of efficient work and true principles in the system adopted for carrying off refuse from human habitations.

Records of death from imperfect sanitation.

"The rate of mortality in London from A.D. 1620, for 23 years onward, is stated to have been 70 per

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* Read before the Yorkshire Centre of the National Association of Sanitary Inspectors, March 22.

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Decrease in death-rate consequent on better sanitation.

1,000 of the inhabitants. At the present day about 18 per 1,000 represents the normal mortality of England and Wales. The returns of the Registrar-General for 1885 show that 57·726 deaths were referred to the principal zymotic diseases, which showed a decrease of 14·036 from the number returned in 1884. During these last 20 years or so, the annual saving of life is computed by those interested in the subject at 60,000, and during five years, 1881–85, the saving of life was increased 30 per cent. per annum, and in the returns for 1888 the rate is far lower than any previous year in the current *decennium*. These are, to a large extent, the results from better drainage, better water supplies, and sanitary progress in other directions." *

Definitions of house drains from sewers, &c.

Drains and sewers are sometimes spoken of without distinction, but it is necessary, in the paper before your notice, to make a distinction. House drains, then, are distinct in their functions from sewers and outfall drains.

A house drain is a channel (whether open or covered) which conveys away from a house, or from a few houses, the refuse liquids, together with such solid matter as may be in suspension and solution in them, and a sewer to be a channel (whether open or covered) which receives the contents of two or more house drains. A main sewer, one which receives the contents of two or more other (subsidiary) sewers; and on outfall sewer, one which receives the contents of all other sewers belonging to the same system. House drains are, then, necessary in every urban and rural sanitary district, and it is this necessity, which has grown with such rapid and gigantic strides, that demands the attention and is the duty of every householder (especially those in whose hands the power is invested) to carry out, in the best known principle, the drains which are to communicate with the dwelling-houses of our country.

To carry out this important work of drainage, it is necessary for us to understand thoroughly what this

Inspector to understand the theory of sewage flow.

conveying liquid refuse from dwelling-houses consists of. It is not merely sufficient to lay a number of earthenware channels in the ground, regardless of inclination, quality of materials, or all sanitary law whatever, that will suffice to maintain that standard of efficiency which is becoming more and more in request and demand in a sanitary official.

In referring to this part of my paper, I may state there are three properties of a sewage flow which

Properties of a sewage flow.

will claim an inspector's attention in advising upon a system of house drainage, be it new or old. The first is the viscidity, or glutinous property of the sewage; second, velocity, which depends upon two subsidiary properties, viz. the hydraulic mean depth of the stream, and its inclination; third, the scouring action of the sewage upon the bottom of the drain.

In respect of the first of these, we take it to be the same as that of water, or nearly; in the second property, if the cross sectional area of a stream be divided by the width of its cross section, measured along its bed, the result is the hydraulic mean depth, and the greater this depth the greater is the velocity, if the inclination remains the same.

* Quotation from a paper on "House Drainage," by William Morley Eggleston.

The flow of a liquid is influenced by the friction between it and the channel through which it runs, and it is retarded more or less, according

Velocity of a sewage flow.

as the extent of the surface of the channel with which it flows in contact is great or small, in relation to the quantity of liquid flowing through the channel. The quantity of liquid discharged by any channel of given size, as a pipe of given diameter, is the result of the sectional area of the stream multiplied into its velocity. It is desirable that the velocity of house sewage should be considerable.

The third property is necessary to be considered so that stoppages of the drains may not

Solid deposit.

take place from the accumulation of solid matter.

From the tables of different authorities I find that the velocity of house drains should not be less than 2 ft. to 3 ft. per second.

One of the first requisites of drainage to dwelling-houses is that the materials should be good and sound, the drain-pipes truly circular, and

Qualities of pipes.

the glaze perfectly smooth and impervious. The kind of clay from which drain-pipes are sometimes made, and the mode of making, are such that during the process of either drying or burning they fall out of shape and become non-circular at the ends. This irregularity of shape in pipes in the same drain causes obstructions to the solid matter of the sewage. These often accumulate, and are not found out for long periods after the drains have been laid, thereby causing a foul state of the drains in which large quantities of foul gases are given off from the decomposing substances, which travel upwards along the drain to the house.

There are several kinds of materials of which drain and sewer-pipes are made from, and although there is but one advantage in having pipes made from inferior materials, I think the gains in the end will be far greater to the capitalist by having the very best materials at the onset, as the saving is only in the material, and very often is represented by a few pence per yard in pipes, whereas the extra labour which invariably has to be given to bad materials reduces the gains to an inconsiderate sum.

Fire-clay pipes in my opinion are the best kind, and are usually thicker than other inferior clays. It

Sockets of drain-pipes.

will scarcely be needed to inform you that house drain-pipes are usually made in 2 ft. and 2ft. 6 in. lengths, excluding the sockets, which in 3-in. and 4-in., 6-in., 9-in., 12-in., and 15-in. pipes should be respectively 1½-in., 1¾-in., 2¼-in., and 2½-in.

The thickness of pipes should be also an important matter in the selection, as by a too slim crust a

Standard thickness of pot-pipes.

great disadvantage is offered, especially where the drain is of considerable depth below the surface. The usual thickness is as follows: 3-in. pipe ⅜ in., 4-in. pipe ½ in., 6-in. ⅝ in., 9-in. pipe ¾ in., 12-in. pipes 1 in., and 15-in. pipes 1⅛ in., though, for my own part, I should prefer the respective standards ⅛ of an inch thicker, because I consider them less liable to fracture.

Breaking weight of pot-pipes.

The breaking weight of a pipe will also give reliable evidence of its quality, and in experiments made by the firm of Messrs. Doulton & Sons on pipes 2 ft. long, the following were the results:—

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Diameter of pipe.	Thickness.	Weight on 12 in. square. cwts.	qrs.	Weight over whole surface of pipe. tons.	cwts.	qrs.
15 in.	1	31	3	7	1	1
12 in.	1 to 1½	53	3	8	13	2
9 in.	¾	64	3	8	18	3

But it would not be prudent to accept these as the breaking weights of all stoneware or fire-clay pipes of like diameter and thickness, even of the same make, for one or a few in a great number might fail with very much less weight. Moreover it would be contrary to all engineering practice to allow an actual weight even to approach any known breaking weight.

There is usually no difficulty in giving a sufficient fall to house drains. if the pipes be true in form and evenly laid (and no fall whatever will compensate for defects in either of these respects); a moderate fall, and yet a sufficient one, is 1 in 40, or 2 in. in 6 or 7 ft. for the body of the drain, and 1 in 20 for the branches.

Inclination of house drains.

The proper size of a sewer or drain must be determined upon a consideration of the laws of hydraulics, moderated by knowledge derived from experience. This is necessary; for by the former alone we should find that a pipe of but two or three inches diameter is sufficient for half a dozen houses, even with the small inclination sometimes given to house drains, but we know by experience that the diameter should not be less than six inches, on grounds distinct from hydraulic laws. But the requisite size of a house drain is often over-estimated. A pipe six inches internal diameter is sufficiently large for the drain of the largest house, and it is not too large for the smallest house. Of course the branch drains, which are only needed for separate slop-water receptacles, need only be 4 in. diameter.

Sizes of house drains.

Yet, how often do we see and hear of owners of house property being advised to lay down 9-in. pipes when several houses are to be drained by one drain, and sometimes even when only one house is to be drained. It is, in my opinion, quite as easy to fall into error of laying down too large a pipe as one too small, as by a pipe too large the three properties of a sewage flow, its viscidity, velocity, and scouring action on the bottom of the sewer is greatly reduced. Consequently, the true principles of good drainage is destroyed. Certainly many drains have become choked with solid sewage, and the fault has been mostly attributed to the supposed too small size, whereas the proper reason has more probably been that they have been badly laid, badly jointed, or inferior pipes used, and 9-in. or larger pipes have been recommended as a remedy. But if a drain (be the diameter what it may) be so laid that stoppages occur from accumulation of solid sewage, the sooner the stoppage takes place the better, for as it takes a a longer time to fill a 9-in. than a 6-in. pipe with solid matter, so much longer does the injurious action go on.

The pipes of house drains should have the greatest attention paid to the jointing, and while several materials are recommended for the purpose, the care required in the labour will each be the same, cement in my opinion being the best.

Jointing.

A common way of laying pipes, but a very wrong one, is to lay them down upon the bottom of the trench, so that the bearing points are on the flanges only, the body of the pipe being unsupported; two defects arise in the drain from this cause, the weight presses out all the material with which the joint has been made, and also causes an inequality of the bottom at every joint. Another common method of laying pipes is to determine the amount of fall in a given length of a drain, and then to test the work with a hand spirit level on each pipe as the work proceeds. And if the instrument be placed a little out of the centre of the pipe, or irregularities exist in the pipes, the result is an error in the ultimate levels or inclination of the drain, with no possible means of its discovery, and a zigzag line of drain vertically is invariably the result. In order that the inclined plane may be maintained throughout the entire length of the drain itself, the boning by three distinct rods, and where practical, at the extremities of the drain, is, in my opinion, the safest and most economical.

Mode of laying pipes.

All junctions of a house drain should, in every case, be turned in the direction of the flow of the sewage, when practical, and when joined at right angles bends ought to be used; and whenever it is found necessary to divert the direction of any straight drain, it should be in bent pipes, as straight pipes cannot be laid in a curved direction with any proper regard to good jointing.

Junction of drains.

Very often has it been my experience to find that drains are invariably terminated through the house wall, under the sink-stone, thus making a direct communication between the interior of the house and the drain, whereby foul gases given off by the drains and sewers are invited into the house; for, although a trap or water-seal may be constructed in the lead waste-pipe, not unfrequently have I seen a lead waste-pipe 1½ in. diameter terminate into a pot-pipe 6 in. diameter, and no attempt whatever has been made to seal the space betwixt the two. It is very much better to terminate all drains outside the walls of the buildings, and place traps in such positions that all waste-pipes may be discharged over them except water-closets.

Termination of house drains.

Whatever the form of a water-trap may be, it consists essentially of a vessel full of water, across which, from side to side, is placed a diaphragm, the lower edge of which is horizontal, and dips into the water. The extent of the dip seldom exceeds 3 inches, and is more often 1½. The greater dip is intended to offer a complete obstruction to the passage of air from one side of the diaphragm to the other; but water absorbs gases, and in this way they pass through it under the diaphragm, and escape on the other side: and I believe it is now understood that no form of trap whatever prevents, at all times, the passage of gases through it. The times when it mostly fails to prevent their passage are when they are driven upwards from the drain towards its upper end where the trap is situated, and there attain an elastic force greater than the atmosphere on the other side of the trap, when the pressure acts mechanically to increase the quantity of air passing through the trap, which at those times is seen (when persons are sufficiently observant of these obscure but dangerous small things) to escape in bubbles; and it is now also well understood that means of escape for these foul gases from the drain into the atmosphere must be provided in front of the trap.

Water-traps.

Nearly all inlets to drains at the ground-level are

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near the doors or windows of dwelling-houses, and therefore the foul gases should not be allowed to escape at those points, under our noses, as it were. It is necessary to observe that sewage, immediately on its entry into a drain, begins to give off the gases of decomposition, and continues to do so until it has been received and dealt with at the outfall works. These gases are declared by the medical officers to be highly injurious to health. It may be possible, some of them say, that the gases themselves are not injurious to health, but only offensive to the senses, and that it is the specific germs of disease which they convey which are to be feared; but even if the gases are not injurious of themselves, they become practically so by acting as the carriers of the germs which are so, consequently it is very desirable to prevent the least offensive and dangerous element of the two from entering the houses, which by so doing the great enemy to health is reduced to the least possible danger.

Sewer gases.

The ventilation of house drains and sewers has received a large amount of thought, and some very ingenious and effectual contrivances have been brought out, many of which will have come before the notice of the sanitary inspectors and surveyors present, and which need not be enumerated here. In my opinion, no method of ventilation is at once so simple, practical, effective, and inexpensive as open communications between the drains and sewers and the atmospheric air. I do not wish to be understood that in ventilating drains in the manner already stated that openings may be made to the drains and placed in any position at the ground-level, but, on the contrary, to carry these openings to the roofs of houses or several feet above; and in cases where large chimney shafts can be conveniently utilized, it will be infinitely of greater advantage.

Ventilation of house drains, &c.

The mischief done to ventilation by using outlets or pipes of far too small area is very great, and as this part of the work in the majority of cases devolves upon the plumber, he is to a very great extent responsible for the effect produced, whether it is or is not effective. I do not intend to throw any blame on a single section of artisans, but merely to point out that in a great many instances the attempts at ventilation through long and small lead or iron pipes is surely fruitless, inasmuch as the element of friction (which is of itself sufficient to prevent the pipe being of any use) seems to me to be entirely overlooked or disregarded; for if no motion took place through a pipe, none would be required. And very often, when such means of ventilation has been found by experience useless in preventing foul gases from entering the house, ventilation is considered useless or a failure, whereas it is the fault of the pipe being too small.

Dr. Alfred Carpenter, in a paper read at a meeting of the Health Department of the Social Science Congress many years ago on the "Influence of Sewer Gas on the Public Health," said, "When a stench is perceived at a particular spot, or in a particular house, orders are generally given to stop the place of issue by trapping the offending opening, with the beneficial result of removing the smell and staying the progress of disease in that particular house or place; but no means are taken to prevent its influence being felt elsewhere. The mischief is simply transferred in a selfish kind of way, and the public suffer for it. Experience of this kind of thing will soon convince anyone that trapping is not a proper remedy unless it is accompanied by the provision of another exit in a safer situation."

Quotation.

The nature of sewer gas has been well pointed out by various chemists and medical authorities, and to a great extent all concur in the belief that dilution destroys it; that if sufficiently diluted with air, it becomes innocuous, and its sting is taken away.

When it first escapes from a sewer it carries with it some condition which is injurious to life, tending, I suppose, to prevent some necessary change in the blood or other vital tissues, either by its own power or by means of a property to which it simply bears the relation of carrier. But if these gases be mixed with sufficient air, we are informed, the noxious exhalations are oxidized and rendered comparatively harmless. If, therefore, we can provide that the way for circulation in the sewers shall be continuous by requiring a sufficient number of outlets at the head of each sewer and drain, I submit that nature will then be allowed to establish a natural circulation by which continuous diffusion, dilution, and rapid oxidation, will at least reduce the dangers of sewer gas to a decimal degree.

In conclusion. I would respectfully submit that as the Infectious Disease (Notification) Act, 1889, can now be fairly considered in operation in nearly every urban and rural district throughout England, new features of sanitary work will be presented to medical officers of health and sanitary inspectors. More sanitary defects will be brought under the notice of local authorities, consequently greater efforts on the part of public sanitary officials will be needed, and a more vigorous and strenuous disposition to deal with such offences on the part of our local representatives in their several official capacities, as county councillors and members of local boards; and unless such provisions are strictly enforced and carried out, I am of opinion that the Act will be a failure and a costly burden upon ratepayers.

THE WEIGHTS AND MEASURES ACTS.—At Marylebone, several retailers of coal in the district of St. Pancras were summoned by Mr. Gibson, an inspector, under the Weights and Measures Act, for having sacks of coal for sale of a less weight than was represented. It was understood that this was the first prosecution in regard to retailed coal under the Weights and Measures Act of last year. The inspector stopped the defendants, who were hawking coal in the streets in sacks supposed to contain hundred and half-hundredweights. The sacks tested were found to contain from 3 lb. to 5 lb. less than the proper quantity. Mr. Cooke said that this was a very important Act of Parliament, especially in regard to the interests of the poor, for any loss to them, however small, was a serious matter. There was a great deal of underselling among coal merchants generally, and he feared that there were many who made it a practice of giving short weight so as to make up for the cheapness of the price charged. This Act would deal with such cases, and if in the future coal dealers were brought before this Court for offences of the kind he should impose the full penalty. Small fines were then inflicted. One of the cases was adjourned, and on a subsequent occasion Mr. de Rutzen said that, owing to the highly penal nature of the Act every opportunity had been given to the defendant to have the full benefit of a technical point to which he was entitled. The case was now complete and, after consideration, he said that he should fine the defendant 10s. It should be borne in mind that the Act did not require it to be proved that the offence was "wilfully" done; it was sufficient to find that the deficiency existed. The defendant was liable to a penalty of £5.

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GLASGOW CORPORATION MODEL LODGING-HOUSES AND ARTISANS' DWELLINGS.

Model Lodging-Houses.

So far back as 1866 the City of Glasgow Improvement Act passed the Houses of Parliament. Its main provisions were directed to the rooting out and, if considered necessary, the reconstruction of the old and dilapidated portions of the city—these plague-spots which had maintained an unenviable notoriety for Glasgow in the death-rates of the kingdom. This improvement scheme embraced an area of about 88 acres, and dealt with a population of 51,300 persons living in 10,000 dwellings. The displacement of the population necessitated the erection and maintenance of dwelling-houses for the waifs and strays. At the census of 1871 (shortly after the improvement operations had commenced) it was found that of families living in one apartment, 14 per cent. had lodgers, and of those in two apartments, 27 per cent. As the one and two apartment dwellings constitute about three-fourths of all the dwellings in the city, it will be seen what an important element the "lodger" is in Glasgow.

Dr. Russell, the medical officer, speaking on this subject in 1876, said—"To my mind the introduction of lodgers into the family circle of those small houses is to be regretted and discouraged. In a one apartment house it is simply abominable to contemplate; and in all cases the close personal contact and the want of privacy, either of the general or family functions, which must prevail are made doubly injurious morally by the introduction of strangers, besides the physical injury of over-crowding. Of this, lodgers are the frequent cause, being crammed into houses, which, without them, would afford tolerably decent and wholesome accommodation to the natural inmates." Again, speaking at Edinburgh, in March 1889, and describing the common lodging-houses of Glasgow before the era of police and sanitary regulation, he said—"Lodging-houses were in those days high places of debauchery and disease. There was no house too miserable for the purpose, and no limit to the number admitted. One result was that to keep a lodging-house was one of the surest and quickest ways to fortune."

To minimise this evil of the lodger in the smaller houses, and to provide accommodation for the vagrant class of inhabitants who occupied the common lodging-houses, the Improvement Trust considered carefully the question of erecting commodious, comfortable, efficient lodging-houses, which would serve as models to those engaged as keepers of common lodging-houses, and tend to the moral as well as the physical elevation of the inmates. Their Act contained the necessary powers for this purpose. A commencement was made with the lodging-house in Drygate Street, containing 287 beds. Its total cost, including site, buildings, and furnishings, amounted to £10,910 18s. 3d. It was opened in 1871, and is exclusively for males. The Russell Street lodging-house for females only, opened also in 1871, cost £3,324 0s. 1d., providing 94 beds. The Greendyke Street lodging-house, opened in 1876 for males, provides 284 beds at a cost of £11,061 12s. 8d., and the addition of the capitalized value of the feu duty amounting to £1,048 6s. 8d. The Portugal Street lodging-house, opened in 1878, provides 308 beds for males at a cost of £15,991 11s. 6d. The Clyde Street Calton provides 324 beds for males at a cost of £14,641 10s. 1d., and was opened in 1879. The North Woodside house for males provides 312 beds at a cost of £15,547 14s. 4d., to which falls to be added the capitalized value of the feu duties amounting to £1,337 14s. 2d. It was opened in 1879. Hyde Park Street, also opened that year, contains 354 beds, and cost £15,030 6s. 8d., with an amount to be added for the capitalized value of the feu duty of £2,175. It will thus be seen that the corporation have provided lodging accommodation in these 7 model homes for 1,869 males and 94 females, at an average cost per bed of £45 2s. 5d., and a total cost in round figures of about £87,000. Commercially they have been a success, yielding as they do an average revenue of 4¾ per cent. on their original cost.

Having thus given a brief outline of the origin and construction of these lodging-houses, we proceed to give a description of a visit paid to one of them on Saturday evening, March 29, 1890. The shades of evening had just set in, as we passed up the few steps of the main entrance of the home at North Woodside Road. This house is planted in a densely-populous locality of the North-Western District of the city. Whilst it is neither the largest nor the latest constructed, it may be taken as a specimen of the whole, as with a little deviation they have been all built on the one principle, and our description of the Woodside one will suffice for the others. The building is substantially built of hewn freestone, and comprises four storeys, with basements. The ceilings of the dormitories are 10 feet high, and that of the recreation hall 13 feet high. The staircases are 7 feet wide, substantially constructed of stone and bricks, the steps and landings being solid Arbroath pavement. The staircases are also well lighted and ventilated by the cupola. We find, on entering, the shop or provision store, forming a kind of semicircular bar on our right, and provided with opening windows for the transaction of business, both in the recreation hall and main entrance. Here the energetic and courteous superintendent, Mr. Simpson, and his partner in life are busy making preparations for the wants of those 312 persons who are to be their guests for the evening. Mr. Simpson kindly showed us round the building, and explained its various details. The recreation hall measures 77 feet by 44 feet, is well lighted on both sides, and provided with opening panes on top portion of windows for ventilating purposes. Seated at the various tables are friendly groups of the inmates engaged at a game of dominoes or draughts, or in discussing some knotty point on politics, social economy, or religion. Others of a more reserved turn of mind are enjoying their pipe by themselves in a corner. Theatrical entertainments, concerts, debates, and games of a varied nature are provided gratuitously to the lodgers, and everything done to make them feel, in every sense of the word, at home. On the opposite of the main entrance is the dining-room, well lighted and provided with 312 lockers, or small presses, corresponding to the number of inmates. These lockers are for the safe custody of each lodger's surplus stock of provisions for use on a future occasion. They are all numbered, and the superintendent provides a key, correspondingly numbered, on payment of a sum of 6d. as a deposit, recoverable on the key being again delivered up. This is an admirable arrangement, and found to work well, both in the interest of the lodgers and the establishment. Adjoining the dining-room is the kitchen, or cooking-hall. The superintendent pro-

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vides and keeps clean the dishes and cooking utensils, but the lodgers perform the cooking required themselves. There is a hot plate sufficient to cook for the whole establishment. It is heated by 1¼-inch copper coil running its whole length. Here the men may be seen waiting the boiling of eggs, frying of bacon, or doing other parts of their cooking.

Adjoining to the dining-hall are a series of wash-hand basins, provided with hot and cold water, and we observe a number performing their ablutions. There is also at same place ample urinal and water-closet accommodation.

Continuing our course to the right, we come upon the wash-house for the bedclothes of the institution, provided with 4 tubs and 2 boilers and hot and cold water. Washings, of course, are carried out every week-day. Next to it is the drying chamber, provided with hot-air flue. There is also here a close-fitting hot-air chamber for disinfecting purposes. Roll sulphur on hot ashes is the disinfectant, and said to be thoroughly efficient in destroying insect life when applied in the close chamber. In the basement are a number of bath-rooms, provided with hot and cold water. The superintendent makes a charge of 1d. extra for the baths, but provides free soap, towel, &c. If a lodger is considered not in a fit condition for the dormitories, and the superintendent is satisfied that he has not the 1d., he is allowed a free bath.

Outside in the court are a number of lavatories, or rather washing accommodation, for the purpose of the lodgers washing their body clothes. It is an interesting sight to observe a large number busily engaged at this, and, from constant experience, they get to be as thoroughly qualified as washerwomen. There is an outside recreation yard, 30 feet by 42 feet, with a long passage at end of building. It has garden seats, and close at hand there are another series of water-closets and urinals. In this yard the men sit in fine weather. It is nicely paved all round. There are also near to this in basement flat 4 partitioned-off wooden boxes for those who require to change their underclothing, ensuring complete privacy. The hot water circulating system supplies hot water for washing, heating, cooking, and cleansing, and is carried throughout the whole building. The house is heated up in winter time to any degree required.

We now come to the dormitories, which are on the various flats upstairs. During the day, the gate at the foot of the first stair is kept locked. The first flat or section comprises 48 beds, and the other flats 88 each. They are divided into two sections. The beds are fitted up on the ships' cabin principle, one man sleeping above the other, but a dividing partition betwixt each pair gives the required privacy to each man. The beds are furnished with wire spring bottoms and hair mattress, a large-size blanket, 3 feet wide, folded, and 2 rugs. The dormitories are well lighted from each side. The ventilation consists of air shafts through from wall to wall, with three air gratings on the floor. These supply fresh air, and the foul air is drawn off by the fanlight to the staircase cupola. Hot-water pipes are carried round each of the dormitories, which are heated up in winter. The walls of the staircases, dormitories, &c., to the height of about 7 feet, are lined with patent enamelled tiles, which give a pleasing and tidy appearance to the whole. The floors, bedding, woodwork, staircases, and every portion of this immense establishment are kept scrupulously clean. Adjoining each dormitory, but completely shut off from it, there is lavatory, urinal, and water-closet accommodation, all well lighted and ventilated. Except for the bath-room, the lodgers provide their own soap.

In March 1889 a special census of the inmates of the model lodging-houses of Glasgow was taken by the sanitary officers. The enumeration also included two of the largest common lodging-houses owned by private individuals. The following abstract may be of interest:—Total inmates 2,721, of whom there were single men 2,076, married men living apart from their wives and families 262, widowers 383. The tradesmen numbered 968, and the labourers and others of no fixed occupation 1,753. Taking the North Woodside house for a few further particulars, the average age was found to be 39, and the average term of residence two years and six months in the model lodging. Amongst the tradesmen are house painters, moulders, blacksmiths, bakers, shoemakers, cork-cutters, engineers, brass-finishers, masons, tailors, sawyers, slaters, joiners, marble-workers, cabinet-makers, coach-makers, bricklayers, &c.

These model lodgings are registered by the local authority under the Public Health Act, and amenable to their regulations for common lodging-houses, but their management is so satisfactory that the interference of the sanitary officer is rarely invoked or required.

Dr. Russell says that, from an official acquaintance with these model lodging-houses extending over the whole period of their existence, there has been a complete immunity from disease, and that it is very rare to find a case of infectious disease originating among the inmates. The superintendents are instructed to get medical assistance at once in case of sickness, and the discipline and direct control over the inmates enables the sanitary authorities, in cases of infectious disease, to adopt such preventive measures as will stamp it out. Other advantages of these houses have been (1) the raising of the status of the lodging-houses in private hands, as several palatial establishments, even out-rivalling those of the corporation in their structure and accommodation, have been lately started; (2) the drawing away from the central district of the city the common lodging-house inmates, and their dispersion over the various districts of the city; and (3) the attraction of the lodgers from the small or ticketed houses to which we have referred already. The present cubic space allowed for these small ticketed houses is 300 feet for adults and 150 for children under 8 years of age. In the model lodging-houses the cubic space is 400 feet.

One important feature remains to be noted, viz. the shop or store, where good wholesome food, provisions, and groceries of every description can be purchased in such small lots as halfpennyworths, and almost at wholesale prices. But there is no compulsion in this matter, and each man is allowed to carry in his own food if he prefers to do so.

The following regulations for the lodgers are posted up in the various apartments.

Regulations to be observed by Lodgers.

1. Lodgers will be received into the house between the hours of 6 A.M. and 10.30 A.M.

2. No one will be admitted to the hall or kitchen until provided with a ticket which can be had from the superintendent.

3. Lodgers will be admitted to bed at 8, 9, 10 and 11.30 P.M. on delivering up their tickets to the assistant. Tickets to be taken out and paid for by

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9 P.M., otherwise the superintendent may let the beds to the first applicants thereafter.

4. No smoking allowed on the stairs, or in the dormitories or dining-hall.

5. No spiritous liquors to be brought into the house. No gambling, quarreling, profane or indecent language, or noise of any description will be allowed, nor anything calculated to disturb the peace and good order of the house, or the comfort of the inmates, and anyone violating this rule will be expelled and the ticket forfeited.

6. The beds must be vacated by lodgers by 8 o'clock in the morning, except in special cases, to be judged of by the superintendent.

7. The doors will be opened each morning at 5 A.M., and will be closed at 10.30 P.M. on week nights, and at 10 P.M. on Sundays. Lodgers arranging beforehand with the superintendent may, however, be admitted after these hours.

8. All property belonging to lodgers must be considered as under their own care; but each lodger may have a separate locker on depositing sixpence, this deposit to be returned on redelivery of the key.

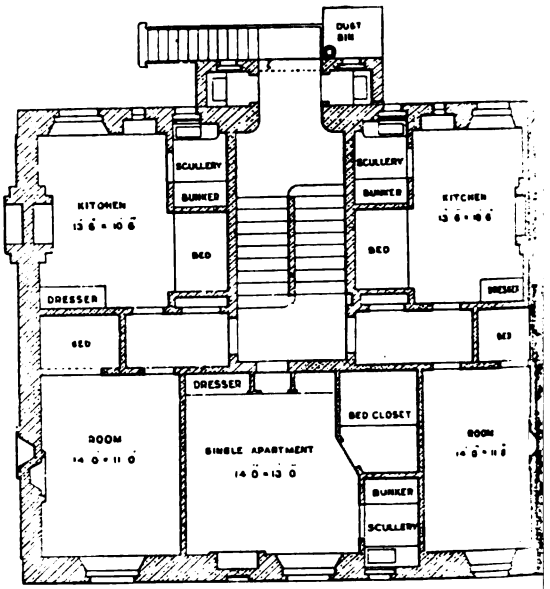
By order,
(Signed) JAMES KING,
City Chambers, Lord Provost.
Glasgow, Aug. 1888.

During the year ending 31st May 1889, there were 167,645 male lodgers accommodated in these houses, charged each 4½d., and 508,851 male lodgers charged each 3½d., making a gross total of 676,496. The difference of 1d. is on account of two rugs being supplied with the blanket. In the female lodging-house there were 34,104 nightly lodgers.

THE ARTISAN DWELLINGS.

The Improvement Trust having had a large amount of vacant ground in the central portion of the city, and failing to meet with suitable terms from purchasers, decided as an experiment to erect model dwellings for the working-classes. After a deputation had visited Liverpool and one or two English towns, the consent of the Town Council was granted to the erection of tenements at the corner of Saltmarket and Steel Street. The ground flat consists of shops. There are five tenements, entered from the street by "passages," or, as they termed in Scotland, "closes." These passages are wide, and approached from the street by five stone steps. This prevents nuisance from such a busy thoroughfare being committed either in the close or staircases. The side walls of these passages are lined with patent enamelled tiles to a height of about 6 feet. This gives them a clean and tidy appearance. There are three flats of dwellings in each tenement, consisting of two rooms and a kitchen, room and kitchen and single apartment to each flat. There are, therefore, nine houses in each tenement, or forty-five houses altogether in the block. They are substantially built of dressed free-stone, with Arbroath pavement steps on the stairs. The stair landings are formed of granolithic paving. At the foot of the first stair an iron gate (to which the tenants only have keys) leads to a stair to the back court, which is also paved with granolith. It is spacious, and here the children can play quite apart from those of the surrounding neighbourhood. A constant current of air is maintained betwixt the back and front by this open sparred gate. The upper staircase windows have opening panes, and are likewise hinged, enabling the staircases to be thoroughly ventilated. Each flat of three houses is provided with two patent flush-out closets, the walls of which are lined with enamelled brick.

The subjoined sketch shows the internal arrangements of each flat.



It will be seen that all the houses are of spacious construction, well lighted, and are provided with sculleries entering off the kitchen, and are provided with sinks. The corporation provides the kitchen ranges. On the top flat is situated the washing-house and drying-room for the tenants household clothing. The flue from the boiler of the wash-house is carried through the drying-room and acts as a heater. The drying-room and wash-house are also provided with ventilating skylight windows for use in dry weather. There are two enamelled earthenware sinks or tubs with hot and cold water taps. The floor is neatly paved with granolithic, and provided with gratings.

The front elevation is of the Scotch baronial style of architecture, with Crow-stepped gables. The rents are respectively £8, £9 18s., and £16. Whilst these rents may be considered high in proportion to other dwellings in the city, the tenants, who conversed freely, and showed us through them, assured us that they were the best that they had ever lived in. Having been only lately constructed, it would be premature to speak at present as to their success from a financial point of view. In the meantime they are all fully let at these rents, and a block of similar dimensions is in course of construction. A caretaker resides on the premises to collect the rents, look after any repairs, and see that the tenants carry out a series of regulations for the cleanliness of the houses, stairs, &c., and for the good conduct of the occupants.

We have mentioned the thorough ventilation of the staircases. This remark applies to all the apartments, including water-closets, larders, &c., which have all windows to the outside walls, and thorough ventilation. The single apartment houses are provided with a small space or recess betwixt the outside door and the inner door. By this arrangement the tenant has the comfort and privacy of the house maintained by these two doors. The single apartment, measuring 14 feet by 13 feet, contains a scullery, coal bunker, and a bed-closet. This bed-closet is divided off by a

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partition 7 feet high of corrugated iron, and preserves absolute seclusion to those using it. The free ventilation is maintained as the partition does not reach altogether to the roof.

These dwellings have been visited by many builders, practical men, and sanitarians, who expressed their approbation. A few weeks ago Lord Rowton visited both them and the model lodging-houses, taking measurements and extensive notes. It is said he contemplates erecting something of a similar kind in London.

In addition to the present block of dwellings drawing near completion, it is proposed by the corporation to erect another tenement of the same kind on the west side of the Saltmarket, at a cost of about £3,000, exclusive of site. It has been carefully estimated that a return of about 4½ per cent. on the capital invested will be yielded. Several companies in London promoted during recent years for the erection of such dwellings are even yielding higher results that this. One company there with a capital of about two millions, and in existence for about twenty years, yields regularly 5 per cent., with accumulating reserve fund.

As a result of the present and recent agitation for improved houses for the poor and working-classes in Glasgow a Joint Stock Limited Liability Company, entitled the Glasgow Workmen's Dwelling Company, has just been formed under the management and patronage of influential citizens. The capital is £50,000, in £10 shares, of which £15,000 has been subscribed by the directors and others interested. Any surplus profit earned will be applied to the furtherance of the company's objects, and to the creation of a reserve fund to equalize dividends and cover depreciation. The directors intend to purchase existing property suitable for renovation and reconstruction. One of the company's provisions is that not more than 5 per cent. of dividend will be paid in any one year, the object being purely philanthropic for the elevation, both morally and physically, of the denizens of the lower or lowest localities of the city.

THE project of a municipal band for London is now fairly launched, a committee having been appointed, consisting of the Earl of Meath, Mr. H. Lawson, M.P., Mr. James Beal, and Mr. W. Phillips, with Mr. Herbert Day, of Toynbee Hall, as honorary secretary. The first list of subscriptions, which has just been issued, amounts to over £100, and is headed by the Duke of Westminster with £20. Mr. Phillips, who is acting as treasurer, invites subscriptions to be sent to him at North Park, Eltham.

A MEETING has recently been held at the Charterhouse on behalf of the Children's Fresh Air Mission, under the presidency of Canon Elwyn, and Mr. Gainsford Bruce, Q.C., M.P., and several gentlemen interested in the work spoke. Since it was started the mission has provided for over 12,000 sickly and poor little children the inestimable boon of a fortnight or three weeks' holiday in the fresh air of the country. These children, selected from the districts of Holborn, Clerkenwell, and St. Luke's, are sent at a total cost of 7s. per week to villages where they find a temporary home among cottagers who often become greatly attached to their little charges. Mr. Hazell, treasurer to the mission, told some amusing stories of the ignorance of country life shown by some of these little Cockneys. One small boy of nine first seeing a pig-stye, invited his comrade to "come and see the nanny goat," and was informed by his superior in natural history that the object of his curiosity was no nanny goat, "but a bear!"

THE REGISTRAR-GENERAL'S LAST QUARTERLY RETURN.

By J. HAMPDEN SHOVELLER.

THE Registrar-General has just issued his quarterly return of births, marriages, and deaths in England and Wales. The statistics relating to marriages are for the fourth quarter of last year, and those relating to births and deaths are for the three months ending March last. The marriage-rate corresponded with the average; the birth-rate was below the average, while the death-rate showed an excess. The mean temperature of the air at the Royal Observatory, Greenwich, was 41°·4, and was 2°·5 above the average for the corresponding quarters of 119 years. The rainfall at Greenwich amounted to 5·10 inches, which was 0·13 of an inch above the average for the corresponding periods of 75 years; rain was measured on 42 of the 90 days in the quarter.

During the fourth quarter of last year the marriages of 126,552 persons were registered in England and Wales, equal to an annual rate of 17·3 per 1,000 of the population. The marriage-rate showed an increase of 0·6 upon that recorded in the fourth quarters of 1887 and 1888, and corresponded with the mean rate in the fourth quarters of the ten years 1879–88. The lowest county marriage-rates were recorded in Surrey, Lincolnshire, Rutlandshire, and Shropshire; the highest in South Wales, Cambridgeshire, and Monmouthshire.

The 226,327 births registered in England and Wales during the three months ending March last corresponded to an annual rate of 31·2 per 1,000 of population, estimated by the Registrar-General to be nearly twenty-nine and a half millions of persons. This rate showed a slight recovery from the unprecedentedly low rate in the first quarter of last year, but was 2·2 per 1,000 below the mean rate in the corresponding quarters of the ten years 1880–89. In the several counties the birth-rates in the quarter under notice ranged from 24·5 in Rutlandshire, 25·4 in Sussex, 26·4 in Shropshire, and 26·8 in Surrey, to 34·7 in Staffordshire, 35·3 in Northumberland, 37·5 in Essex, and 39·0 in Monmouthshire. The 226,327 births registered in England and Wales last quarter exceeded the deaths by 60,348; this represents the *natural* increase of the population. It appears from returns issued by the Board of Trade that 47,375 emigrants embarked during last quarter from the various ports of the United Kingdom at which emigration officers are stationed; excluding foreigners, and distributing proportionally those whose nationality was not distinguished, the emigrants of British origin were 33,071, including 24,503 English, 3,168 Scotch, and 5,400 Irish. The proportion of emigrants last quarter to a million of the respective populations of the three divisions of the United Kingdom were 833 from England, 769 from Scotland, and 1,149 from Ireland; compared with the corresponding quarters of recent years the proportion of emigration showed a marked decline in each division of the United Kingdom.

From returns published by the Local Government Board it appears that the average number of paupers relieved on the last day of each week during the quarter ending March last was 725,893, of whom 184,399 received in-door and 533,577 out-door relief. The proportion of the population in receipt of pauper relief was 24·7 per 1,000, and showed a further de-

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cline from that recorded in recent corresponding quarters.

The deaths of 165,979 persons were registered in England and Wales during the three months ending March last, equal to an annual rate of 22·9 per 1,000 of the estimated population. This death-rate was 1·6 per 1,000 above the mean rate in the first quarters of the ten years 1880–89, and exceeded the rate in the first quarter of any year since 1879, when the rate was 24·9 per 1,000. In the various counties the death-rates last quarter ranged from 17·0 in Rutlandshire, 17·6 in Sussex, and 18·2 in Surrey and in the North Riding of Yorkshire, to 25·2 in Devonshire and in Cornwall, 25·3 in Lancashire, 25·5 in South Wales, and 32·2 in Monmouthshire. In the principal urban districts comprising the chief towns, and containing an estimated population of more than nineteen millions of persons, the rate of mortality last quarter was equal to 23·5 per 1,000; in the remaining and chiefly rural population of more than ten and a quarter millions of persons the rate was 21·8. The urban rate was 1·7, and the rural rate 1·8, above the mean rates in the first quarters of the nine years 1881–89. In equal numbers living the deaths were 108 in the urban to 100 in the rural population, the mean proportion in the nine preceding corresponding quarters having been 109 to 100.

In the twenty-eight large English towns, including London, and having an estimated population of nearly nine and three-quarter millions of persons, the deaths registered during the quarter under notice corresponded to an annual rate of 24·7 per 1,000, which exceeded by 1·2 the general urban rate, and was 2·0 above the mean rate in these towns in the corresponding periods of the eight preceding years, 1882–89. While the death-rate in London last quarter was 23·6 per 1,000, it averaged 25·6 in the twenty-seven provincial towns, among which it ranged from 19·1 in Birkenhead, 19·4 in Nottingham, 19·7 in Leicester, and 20·2 in Brighton, to 28·4 in Sheffield, 28·5 in Blackburn, 28·8 in Bolton, 29·6 in Preston, and 33·9 in Manchester. The rates of mortality at different ages in the twenty-eight large towns showed the usual wide variations, owing in great measure to the differences in the age and sex distribution of the population. The death-rate among infants, measured by the proportion of deaths under one year of age to 1,000 registered births, ranged from 116 in Portsmouth, 117 in Newcastle-upon-Tyne, and 127 in Birkenhead, to 175 in Liverpool and in Salford, 176 in Bristol, 179 in Preston, and 180 in Bolton. The rate of mortality among children and adults aged between one and sixty years did not exceed 10·1 in Leicester, and 10·7 in Norwich, in Nottingham, and in Birkenhead, while it was equal to 18·2 in Bolton and in Newcastle-upon-Tyne, and 21·7 in Manchester. Among persons aged upwards of sixty years the death-rate ranged from 75·5 in Cardiff, and 81·1 in Brighton, to 139·3 in Sheffield and 163·7 in Manchester.

The 165,979 deaths registered in England and Wales during the quarter ending March last, included 11,947 which were referred to the principal zymotic diseases; of these, 4,658 resulted from whooping-cough, 2,010 from measles, 1,533 from scarlet fever, 1,396 from diphtheria, 1,252 from diarrhœa, 1,094 from "fever" (including typhus, typhoid, and simple and ill-defined forms of fever), and only 4 from small-pox. These 11,947 deaths were equal to an annual rate of 1·65 per 1,000, which was 0·41 below the average rate in the ten preceding corresponding quarters. The zymotic death-rate in the twenty-eight towns last quarter averaged 2·04 per 1,000, but while it was under 1·00 per 1,000 in Leicester, Birkenhead, Huddersfield, Halifax, and Cardiff, it was 3·01 in Liverpool, 3·30 in Bristol, 3·42 in Salford, and 3·64 in Bolton. In fifty other large town districts the zymotic death-rate averaged 1·84 per 1,000, while in the remaining and chiefly rural parts of England and Wales it was 1·38 per 1,000.

Whooping-cough was the most fatal zymotic disease in England and Wales during the quarter under notice. The 4,658 deaths attributed to this disease were equal to an annual rate of 0·64 per 1,000, and slightly exceeded the average rate in the corresponding periods of the ten years, 1880–89. In the twenty-eight large towns the death-rate from whooping-cough averaged 0·86 per 1,000, and was highest in Salford, Bolton, Brighton, and Bristol. The 2,010 fatal cases of measles were equal to an annual rate of 0·28 per 1,000, against an average rate of 0·46 in the corresponding periods of the ten preceding years; among the twenty-eight towns the rate of mortality from this disease averaged 0·32 per 1,000, and was highest in Norwich, Birmingham, and Liverpool. The 1,533 deaths referred to scarlet fever were equal to an annual rate of 0·21 per 1,000, which was considerably below the average rate in the ten preceding corresponding quarters; in the twenty-eight large towns the scarlet fever death-rate was equal to 0·28 per 1,000, and was highest in Manchester, Plymouth, and Sheffield. The 1,396 fatal cases of diphtheria were equal to an annual rate of 0·19 per 1,000, and exceeded the average rate in the corresponding quarters of recent years; the rate of mortality from this disease averaged 0·24 per 1,000 in the twenty-eight large towns, among which diphtheria was proportionally most fatal in Bolton, Manchester, and Salford. The 125 deaths ascribed to diarrhœa were equal to an annual rate of 0·18 per 1,000, which was slightly below the average. In the twenty-eight large towns the diarrhœa death-rate was 0·19 per 1,000, and was highest in Salford and Blackburn. The 1,094 deaths referred to different forms of "fever" (principally enteric) were equal to an annual rate of 0·15 per 1,000, the average in the ten preceding first quarters having been 0·23.

In the twenty-eight large towns the fever death-rate averaged 0·15 per 1,000, and corresponded with the general English rate from this disease; among these large towns the highest rates of mortality from fever were recorded in Manchester, Salford, Huddersfield, and Sunderland. The deaths referred to small-pox in England and Wales, which had been but 28 during the whole of 1889, were only 4 during the three months under notice, with one exception the smallest number in any quarter on record.

The causes of 152,361, or 91·8 per cent., of the 165,979 deaths in England and Wales last quarter were duly certified by registered medical practitioners, and 8,571, or 5·2, by coroners after inquest. The causes of the remaining 5,047, or 3·0 per cent., of the deaths were not certified. In London the proportion of uncertified deaths did not exceed 0·9 per cent., while it was 3·4 in the remainder of England and Wales. In the twenty-seven large provincial towns the proportion of uncertified deaths averaged 2·9 per cent., and ranged from 0·4 in Norwich and in Plymouth, and 0·6 in Portsmouth and in Derby, to 5·7 in Sheffield, 6·0 in Halifax, and 6·2 in Liverpool.

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Analysis of the Vital and Mortal Statistics of the Twenty-eight Great Towns, dealt with in the Registrar-General's Weekly Returns, for the First Quarter of 1890.

Towns.	Estimated Population middle of 1890.	Births.	Deaths.	Annual Rate per 1,000 Living. Births.	Deaths.	Principal Zymotic Diseases.	Deaths from Principal Zymotic Diseases.	Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Whooping-cough.	Fever.	Diarrhœa.	Deaths of Infants under one year of age to 1,000 Births.	Rate per cent. of Uncertified Deaths.
28 Towns	9,715,559	77,745	59,791	32·1	24·7	2·0	4,930	1	779	683	585	2,092	371	419	149	2·1
27 Towns	5,293,898	42,950	33,802	32·5	25·6	2·0	2,583	—	441	498	248	865	256	275	154	2·9
London	4,421,661	34,795	25,989	31·6	23·6	2·1	2,347	1	338	185	337	1,227	115	144	144	0·9
Brighton	123,659	802	623	26·0	20·2	1·8	55	—	1	3	3	42	2	4	141	2·7
Portsmouth	142,952	1,316	841	36·9	23·6	1·1	40	—	1	2	8	21	7	1	116	0·6
Norwich	95,352	894	548	37·6	23·1	1·6	39	—	16	2	8	2	7	4	149	0·4
Plymouth	78,780	674	508	34·3	25·9	2·2	44	—	4	15	7	16	1	1	134	0·4
Bristol	232,248	1,709	1,562	29·5	27·0	3·3	191	—	9	12	5	148	9	8	176	2·3
Wolverhampton	83,406	688	569	33·1	27·4	1·8	37	—	3	4	4	17	2	7	169	1·4
Birmingham	461,865	3,712	2,893	32·2	25·1	2·0	228	—	87	57	12	37	14	21	137	3·0
Leicester	154,344	1,245	757	32·4	19·7	0·4	17	—	—	6	2	—	6	3	149	2·4
Nottingham	244,909	1,627	1,183	26·6	19·4	1·1	68	—	8	12	7	13	14	14	143	1·4
Derby	100,871	716	520	28·5	20·7	1·3	33	—	12	1	3	10	4	3	131	0·6
Birkenhead	105,049	848	500	32·4	19·1	0·7	18	—	1	2	1	9	1	4	127	1·0
Liverpool	613,463	4,696	4,031	30·7	26·4	3·0	461	—	179	65	26	143	25	23	175	6·2
Bolton	115,846	994	831	34·4	28·8	3·6	105	—	2	15	11	61	7	9	180	1·9
Manchester	379,437	3,545	3,204	37·5	33·9	2·7	256	—	35	56	41	55	31	38	157	2·6
Salford	242,509	1,846	1,461	30·5	24·2	3·4	207	—	9	30	44	70	20	34	175	3·4
Oldham	146,716	1,026	898	28·0	24·5	1·0	37	—	—	10	—	21	1	5	171	2·0
Blackburn	123,553	1,093	879	35·5	28·5	2·0	61	—	7	15	3	10	8	18	171	2·8
Preston	105,163	1,036	776	39·5	29·6	1·3	33	—	1	10	7	:	3	11	179	2·3
Huddersfield	94,253	568	527	24·2	22·4	0·8	18	—	—	1	2	5	9	1	174	3·8
Halifax	82,034	628	517	30·7	25·3	0·8	17	—	1	2	6	3	3	2	174	6·0
Bradford	240,515	1,633	1,516	27·2	25·3	1·0	62	—	29	7	1	9	5	11	148	2·4
Leeds	363,799	3,072	2,520	33·9	27·8	1·9	171	—	5	46	6	71	23	20	152	1·0
Sheffield	332,837	2,755	2,353	33·2	28·4	2·1	172	—	17	82	20	22	19	12	166	5·7
Hull	213,833	1,702	1,255	31·9	23·5	1·6	85	—	3	12	7	48	8	7	156	3·0
Sunderland	136,506	1,268	816	37·3	24·0	1·6	53	—	9	16	2	6	15	5	136	1·8
Newcastle-on-Tyne	162,987	1,676	1,101	41·2	27·1	1·2	50	—	2	8	11	15	11	3	117	1·9
Cardiff	117,012	1,181	613	40·5	21·0	0·9	25	—	—	7	:	10	1	6	135	2·3

THE SCILLY ISLES AS A HEALTH RESORT.

If fresh air, a sunny clime, sea breezes, and simple living are requisites for the delicate among our people, then surely no better place exists than the Scilly Isles. It is not necessary to seek these health-giving desiderata in other lands at great expense and much fatigue; they lie at our very doors, and the fact that they have escaped knowledge hitherto must be attributed to the lack of self-assertion on the part of Scilly and the Scillonians Divided from the mainland by a sea passage of about three hours and a half, these islands offer advantages which can scarcely be over-rated, whether for a winter or a summer health-resort. There are no frosts or excessive cold in winter, for these isles are under the beneficent influence of the Gulf Stream, and there is no overpowering heat in the summer, for the Atlantic breezes give life and freshness to the air even on the hottest day in midsummer.

Although there are many islands in the Archipelago, of which five are inhabited, only one lays itself out to receive visitors for any length of time, Tresco being occupied by the Lord Proprietor, Mr. Dorrien Smith, and St. Martin's, St. Agnes, and Bryher are too busily engaged in work to bestow attention on strangers.

St. Mary's, then, the principal island, is the one on which to take up one's abode, on account of the peculiar advantages it offers. Its walks are varied and beautiful with a choice of downs and lanes, while a more lovely promenade than the mile and a half round the garrison, through gorse and heather, with its widespread view of rocky islets, stately lighthouses, and glittering sea it would be difficult to find in any country.

The picturesque granite giant rocks all round the coast, piled up into all manner of fantastic and strange forms, invite attention at every turn, and the more the tourist looks the more he learns to appreciate the beauty before him.

On calm days good and cheap boating is to be had under the guidance of trustworthy boatmen, who, knowing the treacherous nature of this coast, have that wholesome fear of running into danger which constitutes real courage, and prevents visitors from feeling the least alarm while under their care, and enables them to enjoy to the full the delicious air and lovely scene.

The boatmen have too much regard for the lives of their visitors and the safety of their own boats to allow anyone to go out alone, and thus people may feel perfectly secure and at ease on this subject.

The town, called Hugh Town, is large and straggling, quaintly built on an isthmus, which looks as if a higher tide than usual would sweep the whole away, leaving St. Mary's Island cut into two.

There are two hotels—Hugh House and Tregarthen's Hotel—but we can only speak by experience of the latter, kept by the Misses Tregarthen. It is good in every way, being clean and comfortable, with abundant food and having a home-like, pleasant feeling about it. The bed-rooms are good-sized, with delightful views from the windows, and there is one private sitting-room to be had, which is quite unlike

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the conventional hotel ideal, and therefore all the prettier.

For those who meditate a long stay, lodgings in the town are obtainable at five or six shillings a day for board and lodging, the people of the house generally preferring visitors to leave all the catering to them, as strangers would not know how to set about this important business.

Mr. Tonkins, of Hugh Town, would readily answer any inquiries as to suitable houses. He is intimately acquainted with every person and every rood of land in the place, and has also published a very good shilling guide to the islands, which can be obtained from him.

Food is good and abundant, the island supplying all necessaries, the freshest of fish, the sweetest of butter and milk, the best eggs and cream; bread, meat, and fowls are all equally good; the vegetables, too, are excellent and free from the disadvantage of having travelled long distances by train in tightly-packed boxes.

The water is good, there being deep fresh springs all over St. Mary's and Tresco, but as there is little lime in it, the people sometimes dissolve some in it before drinking.

The inhabitants live to a ripe old age, and the death-rate is very low, testifying to the healthy state of the town and the beautiful climate.

There is a resident doctor, Dr. Moyle, who has been on the island over forty years, and is consequently well acquainted with the climate and its effects, while the one thing lacking, a chemist's shop, will shortly be opened.

Of other shops there is no lack, and most, if not all, of the necessaries of life can be obtained in them.

The church is pretty and quaintly arranged, like a cathedral choir, with polished stalls all round; the singing is excellent, and the services, at a quarter to eleven on Sunday morning and half-past six at night, are bright and cheerful.

The great advantage of St. Mary's to those who like to keep in touch with the outer world is that it has telegraphic communication with the mainland, or the "main," as we say in Scilly.

To make a sojourn in St. Mary's perfect, two or three good pony-carriages are required, and also a bathing-machine, though there are numerous secluded little coves where bathing can be enjoyed with security and exemption from being overlooked.

There is a pier at St. Mary's used chiefly for business purposes, but affording a pleasant, busy view of the chief industry of the place—namely, flower-farming.

The greatest attraction of the islands, however, is the flower-farming itself. These islands might more correctly be termed the Islands of Flowers, for they teem with beautiful flower-life, and from December to June are covered with acres of golden, white, and lemon-coloured daffodils, narcissi, and crimson anemones, which is a sight never to be forgotten by those who have once seen it.

Camellias, rhododendrons, marguerites, fuchsias, and geraniums grow on trees and bushes in the open air, while dræcena palms, blossoming aloes, and tropical vegetation of all kinds almost cheat one into the belief that one is far away from European soil; and the wonder of it is that, notwithstanding this luxuriant vegetation, there is not a single noxious animal on any of the islands.

For the artist and poet, Scilly offers unrivalled attractions, while the antiquarian can rejoice in Druidic barrows, pillars, and in Star Castle, dating from Queen Elizabeth, with its quaint banqueting-hall and tortuous passages, and in the remains of Tresco Abbey and other ruins.

For the lover of the marvellous, many romantic legends are associated with the numerous caves and valleys, and thrilling tales of peril and bravery, death, and disaster are plentiful in connection with the lofty headlands and treacherous sea.

The admirer of Nature and the invalid in quest of health are abundantly catered for, and, in fact, the Scilly Isles are rich in all that makes a health-resort attractive and desirable.

OVER-CROWDED CEMETERIES.—In the Lower House of the Convocation of York, the Archdeacon of Manchester in moving that approval be given to the memorial to the Government promoted by the Church of England Burial and Funeral Reform Association, said that the amendment of the Burial Acts was a question which had been brought forward, and would be brought forward, whatever they might say or do, and he thought the Church should rise up and take the lead in this important matter. The Rev. Canon Hawkins, vicar of Lytham, in seconding, said that the statute law now bearing on the subject of burial is scattered over some twenty unrepealed Acts of Parliament, exclusive of Acts incidentally referred to and of registration Acts, and also that the memorial was in the interest of the Church, and also in the interest of the faith. Archdeacon Blunt remarked that the Burial Reform Association was an excellent society, but that it would be more in accordance with the practice of the Church to adopt the memorial as their own instead of giving their approval to the memorial of a society. This suggestion was adopted, and the resolution was carried unanimously.

THE USE OF ALCOHOL IN HOSPITALS.—A very interesting report has been presented to the British Medical Temperance Association by Drs. Morton, Moir, and Pearce, on the administration of alcohol in hospitals. The committee have drawn up a series of tables full of instructive figures, instituting a comparison between the amount expended under this head in 1863 and in 1888. The remarkable fact is noted that in these 25 years there has been, from the returns made by 113 hospitals, an increase of 300 per cent. in the charge for milk and a decrease of 47 per cent. in the charge for alcohol. A second table gives returns from 60 hospitals of which no previous record could be found. On the basis adopted by Dr. Fleetwood Buckle, in his report on 1863, these 60 hospitals showed a decrease of 39 per cent. in the expenditure for alcohol per bed. A third table shows the comparative alcoholic charges per bed in 1863 and 1888 respectively. In 73 hospitals there had been an increase of 2,108 beds, and a decrease of total average cost per bed of £78 3s. 5d. Beds have thus increased at the rate of 25 per cent., while the amount expended on alcohol has decreased at the rate of 47 per cent. Only eight of this group of hospitals showed an increase in the quantity of alcohol consumed. In the remaining 65 the decrease ranged from 30 to 83 per cent. In the London Fever Hospital, while milk has risen from £150 to £650 per annum, the disbursements for alcohol were at the rate of only 15s. 2d. per bed in 1888, as compared with £3 5s. per bed in 1863. In St. Bartholomew's Hospital the milk bill had gone up from £600 to over £2,000, while the alcohol bill had gone down from £1,446 to £953. The *British Medical Journal* points out that these statistics prove that there has been a gradually increasing rational medical administration of alcohol, the credit of which must be awarded to the medical staffs of the hospitals, a fact which affords yet another proof of the lively interest in the promotion of temperance taken by the medical profession.

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THE

SANITARY RECORD.

The Organ of the Association of Public Sanitary Inspectors of Great Britain, and of the National Association of Sanitary Inspectors.

MAY 15, 1890.

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The Editor will be glad to receive, for publication announcements of meetings, reports of proceedings, and abstracts or originals of papers read at meetings of Medical Societies of Health, Public Analysts, and Sanitary Inspectors' Associations, &c.

Medical Officers of Health, Public Analysts, Town Clerks Local Board Clerks, Sanitary Surveyors, and Inspectors, are requested to send Notices of Appointments and Vacancies to the Editor, care of Messrs. W. H. ALLEN & Co., 13 *Waterloo Place. S.W.*

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THE FIRST YEAR OF THE LONDON COUNTY COUNCIL.

IT was a happy instance of Lord Rosebery's tact that he should make of the accident that the Council held their first meeting after the Easter recess in their new chamber at Spring Gardens, an occasion for a public summary of their administrative work. The retrospect will, by a special vote of the Council, be printed as an official paper, and will be of great utility in that form to all who are concerned in the good government of the metropolis. But it will not be amiss to direct attention at once to a few of the more important features which are to be gleaned from the shorter reports available in the daily press.

The retrospect took the form of a sketch of the work of the various Committees, through whom the Council has to carry on its daily work. It is to be feared that even the instructed public has little idea of the vast magnitude of the work of governing London, even in the very limited sphere in which the Council is as yet permitted to labour. The Committees number 22 or 23, of which one, the Asylums Committee, finds full occupation for 60 members, while the housing of the working-classes occupies 30 members, and is divided into 6 or 7 sub-committees, and the Parks and Open Spaces occupy 30 more, who are also subdivided by districts and otherwise. These three committees formed of themselves the staple of the Chairman's first review, and their work is well worth the notice both of their friends and of their critics.

We cannot here discuss the management and development of the Asylums under the Council's jurisdiction. Lord Rosebery tells us that their buildings at Claybury are to cost half a million, and that additions are being made at Cane Hill to accommodate as many as 876 persons. Perhaps, therefore, it is not surprising that the Council declined to entertain Mr. Brudenell Carter's ambitious project of a special asylum for the scientific and experimental study of lunacy. But it is an obvious anomaly that the Council should have these asylums at all. The men who are qualified and who are likely for any reasons, good or bad, to be elected Councillors and Aldermen, are not at all likely to possess either training for or special interest in so very difficult and technical a task. The Metropolitan Asylums Board has already a large range of hospital work, and when it is replaced, as it must be soon, by a central Poor Law Board for London, it ought to take this department off the overladen hands of the new municipal authority.

The Housing Committee has proceeded, as some of their critics will be surprised to hear, with extreme caution. They found, when they assumed office, that the vastness and the complexity of their task quite forbad any sudden action. Therefore they devoted their first care to a careful examination of the ground. They accumulated, by means of a shower of circular questions, a great body of information; and they set themselves to a scrupulous study of the existing powers and procedure. The result has been to convince them, without distinction of party, that the law must be amended before much can be done. The magnitude of the work that needs doing may be guessed from the fact that they have already over 200 insanitary areas in hand. These, however, are nearly all small patches, which cannot be dealt with advantageously under Cross's Act; and the burden of the Committee's Report is that Torrens' Act is unworkable. That is the fault, in great part, of the Vestries—or, rather, of the people who elect the Vestries, and who, be it remembered, will, within the next few days, have another opportunity of amending the *status quo*. But even conceding the apathy of the local electorate, and the unreliability of the local vestryman when he and his friends are owners of small property, there is no reason why Torrens' Act should not, in the promised Consolidation Scheme of the Government, be made to work more smoothly than it does. The subject is treated suggestively by Mr. Costelloe—himself a member of the Housing Committee—in his introductory address to the Housing Conference which is now meeting at the National Liberal Club; and as we print the whole paper on page 555, we shall not here do more than refer to it as a practical statement of difficulties and a practical proposal for their removal.

But besides the question of insanitary areas, and the methods of reforming them, the Council has had to direct its attention to the other side of the problem. It is one thing to sweep out the dens in which the people should not live; it is another matter to find a better place for them to live in. There are those who say confidently that the total number of

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rooms in the metropolis is, at this moment, scandalously inadequate to the number of its inhabitants. Statistics sufficiently exact are wanting; but it is not to be wondered at that it is a burning question in the Council whether or no it ought itself to become a builder of artisans' dwellings, and use its tremendous advantage of unlimited capital at 2¾ per cent. to accelerate the supply of decent houses. The Housing Committee have not yet given any final deliverance on this difficult question. It is well known that they are much divided on the subject; but they have, after a tour of inspection to Glasgow, come to the conclusion that the "homes" of the poorest of the poor—the common lodging-houses—are intolerable, and that they may and should use their corporate wealth to supplant them with something more human.

Difficulties have arisen as to the precise scheme suggested by way of a first experiment, but there can be little doubt that this principle will before long be carried out with vigour, as it has been, with the best results, in Glasgow (see p. 534). The vote of the Council which affirmed, by an unusual majority, the principle of providing such accommodation has made it certain that the Council will take immediate action. If the experiment succeeds—not only as a social improvement but also as an investment—it will be repeated. It does not, of course, exclude private and philanthropic effort—and any municipal body would make a great mistake if it so acted as to drive individual energy out of the field. That has certainly not been the case in Glasgow, where some of the largest lodging-houses of the new type are owned by private persons. But in view of the vastness of the metropolis, it is clear that the community must help to pave the way and even to lose money, though that, with decent management, should not be necessary, in making a great and humane experiment.

One point in the Housing Report is well worthy of the notice of all who care for sanitation. The legislative powers given to Vestries to make bye-laws for the regulation of tenement houses were amongst the most useful of the powers concerned with the better housing of the people. The County Council has published a special return, by which it appears that these regulations are now a dead letter in nine parishes out of ten. In many places they were, in a fit of public spirit, enacted and put in force with a flourish of trumpets, only to be ignored and silently shelved as soon as public attention was diverted to something else. The Committee has done us a great service in letting a little light in upon the matter, and it will be the fault of the electors themselves if it is not followed up.

Our general conclusion is that it is a matter of clear urgency that the Housing Acts should be not merely "consolidated," but so amended and brought into relation with the new state of things which the very existence of the London County Council involves, that the reformation of the London slums may make effectual progress. What changes the District Councils Bill may make we cannot forecast; but whatever it may propose, there is little doubt that vestrymen will still be vestrymen, even if they change their name. To leave the enforcement of any such code of law as is required to meet the emergency in the hands of such a body is an absurdity. They cannot be expected to be either strong enough or disinterested enough to do what London wants. And if it is not done—or, rather, so long as it is not done—the whole community suffers in health, in morals, and in stability by their neglect.

MR. CHAPLIN ON TUBERCULOSIS.

AN influential deputation, representing the meat trade of the United Kingdom, lately waited on Mr. Chaplin, Minister for Agriculture, and Mr. Ritchie, President of the Local Government Board, to lay before them certain grievances under which they laboured with reference to tuberculosis, and to ask for some relief. In particular it was alleged that during the last year medical officers of health and sanitary inspectors had given special attention to tuberculosis, with the result that butchers who have purchased an apparently healthy beast, giving a fair price, often suffer the loss of the whole, the carcase being pronounced unfit for human food owing to tuberculosis. It was urged that the matter was of great importance, and that it was not reasonable that the butcher who exercised due caution should exclusively bear a loss which was incurred in the interest of the public health. Mr. Chaplin, in reply, admitted the importance of the question. The deputation had his highest sympathy, but he said it was very little that could be done for their material help either by the Board of Agriculture or the Local Government Board. It was represented that the trade had suffered considerable loss, and it was in this connection that they put forward a claim for compensation. It would, no doubt, be in his power to pass an order to bring tuberculosis under the Contagious Diseases (Animals) Act, but were he to do so they would be disappointed in the effects.

Compensation, as paid under the Contagious Diseases (Animals) Act for pleuro-pneumonia, was paid for animals which were slaughtered against the will of the owner for the prevention of the spread of that disease. The compensation now sought was for animals voluntarily slaughtered by the owners, and offered for sale for their profit. They bought animals in accordance with their own judgment, had them slaughtered when they thought fit, and unfortunately sometimes the meat was condemned as unfit for human food. In seeking compensation, were they not asking for insurance against one of the risks of their trade?

If Mr. Chaplin's response to the deputation had gone no further than this, it would have been a statesmanlike address, and no one could have found fault with it. Unfortunately, however, like so many speakers, he did not understand when he had said enough, and forthwith proceeded to argue "whether the trade ought to be called upon to undergo that risk"; in other words, whether there was adequate proof that the meat of tuberculous animals was detrimental to human beings when used as food. He admits that this is a question on which he is not competent to pronounce a definite opinion, but adds (we quote his own words as corrected by himself)—"At the same time, in the midst of many and various other kinds of work, I had done my best to arrive at a knowledge of the facts and the truth upon the question, and personally I inclined to the belief that the danger was exaggerated, especially in cases where the disease had existed in its earlier stages. Meat, I understood, of that description in enormous quantities was frequently consumed at present, and, so far as I could learn, without the harm which was apprehended in some quarters, and without people even knowing it themselves."

It is almost impossible to say how much harm a statement like this made by a Minister of the Crown may do. It was made doubtless with all reserve, introduced with a line or two of self-depreciation, &c.; still the statement was made, and by the Minister for

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Agriculture. That the butchers were pleased is shown by the cheers which Mr. Chaplin's remarks received; but medical officers will be discouraged if not discredited, and magistrates who have hitherto given full weight to the evidence of experts in diseased meat cases will learn, on the high authority of a Minister, that the danger from tuberculous food is exaggerated.

The position of the experts and medical officers of health who contend that there is real danger in eating the flesh of tuberculous animals has always been a position of difficulty, and one open to the attacks of the ignorant and the interested. What they contend is, in the very nature of the case, incapable of absolute proof. The proof by analogy is very strong, but it is not absolute. Various kinds of animals have been fed on tuberculous flesh and the disease communicated, but this does not satisfy the cavillers. It is not lawful to experiment upon the human animal, and even if it were, the objectors would ask what positive proof there was that the persons fed on tuberculous flesh who developed tuberculosis did not derive the disease from some other source. However, medical officers of health who wish to stop the sale of tuberculous flesh believe that an experiment on a very large scale has in the past and is now being tried, on the injuriousness of tuberculous flesh as human food. They will not deny that enormous quantities of tuberculous meat are consumed at present, but they will deny that it is without harm to the consumer.

Mr. Chaplin is surprised that phthisis is not increasing, if it be true that the ingestion of tuberculous meat may communicate the disease. Is he quite sure that phthisis is not increasing? Has he any reason for believing that the proportion of tuberculous meat used as human food is increasing? The opinion of medical officers of health, and, we may add, of the butchers also, is that the proportion of tuberculous meat allowed to pass is diminishing every year. We do not like to think so, but in reading Mr. Chaplin's speech we cannot help feeling that throughout his aim was to say something agreeable to his hearers. He certainly succeeded, but the triumph is nothing to be proud of. The question the Minister raised, Was there adequate proof that the meat of tuberculous animals was detrimental to human beings when used as food? is dealt with in an article in the *Nineteenth Century* of September last. The author is Dr. Henry Behrend, a competent authority. We make the following brief extract from the evidence he adduces. It appears to us to answer Mr. Chaplin's question :—

"Special attention was devoted to the consideration of the subject at the Congress on Tuberculosis held in Paris in 1888, and the president, M. Chauveau, confirmed the results of the experiments made by himself and MM. Villemin and Cornil on its artificial production in healthy animals fed upon tuberculous matter. This had been previously demonstrated by M. Toussaint, who had also proved that the bacillus of tubercle can withstand a high degree of heat without losing its vitality, so that he had produced the malady in cattle by feeding them with the juice expressed from the steak of a tubercular ox, cooked so as to be slightly underdone. To this crucial experiment was added the equally weighty and practical statement, as the outcome of investigations by MM. Strauss and Wurtz, that these bacilli were not destroyed by the action of the gastric juice, when ingested by the human subject. Their method of action appears to be by the production of a fermentative process, and this, once in operation, is not arrested by the death of the bacillus."

But, it may be asked, is it certain the malady existing in cattle is identical with that of man. On this we submit the opinion of Dr. Klein, undoubtedly the highest practical authority in the country. He states "that tuberculosis in cattle and man is the same disease, and that it is communicable by ingestion. The agent of distribution is the circulating blood, and therefore no part of an animal in which even a single organ is visibly affected with tubercle can be held free from the virus, and there is danger to the consumer of any part of the flesh of the animal." Dr. Klein, moreover, remarks that "centuries ago the Jewish Church seemed more alive to the dangerous *rôle* that the meat of diseased animals plays in affecting man than our rulers appear to be at this day, notwithstanding scientific discoveries and exact experimental evidence. Among the maladies indicated in its code as rendering an animal unclean and unfit for consumption, none is more clearly described than that we nowadays describe as tuberculosis in cattle."

A word now on the result of this practice of excluding from the Hebrew dietary all animals affected in the slightest degree with tuberculosis. Dr. Behrend tells us that "the comparative immunity of the Jewish race from the tubercular diathesis has been recognised by all physicians whose special experience entitles them to express an opinion, and is the more remarkable when the adverse conditions under which the vast majority live are taken into consideration. The medical officers of health in some of the poorest quarters of London, where the bulk of the Hebrew population dwell, have repeatedly commented upon this fact in their official reports." We note also the personal testimony of Dr. Behrend—"In a practice of thirty years, largely among Hebrew patients, I have not yet met with a single case of phthisis in the members of that faith."

We have not space here to multiply quotations to convince those who yet doubt that the sale of meat from tuberculous cattle should be forbidden. It is, at least, satisfactory to know that the Minister of Agriculture admits that it is his duty to obtain the fullest information, and then take such action as may be needed. "The Department," he says, "might obtain the definite opinion of the highest authority as to whether the consumption of the meat of animals in the primary stage of tuberculosis was dangerous or not. That was a matter which affected public health, and was a matter of the highest importance. They wanted the opinion of some committee or association of the best scientists and experts, and then it would become his duty to consider how the question could be vitally dealt with."

More recently Mr. Chaplin, in reply to a question by Mr. Gerald Balfour, stated definitely that the Local Government Board were about to institute an inquiry into the fitness or unfitness for human food of the meat of animals affected with tuberculosis. It is gratifying that this decision has been come to so promptly.

THE DAIRY TRADE AND THE INFECTIOUS DISEASE (PREVENTION) BILL.

THE dairy trade, as represented by the British Dairy Farmers' Association and the Metropolitan Dairymen's Society, have been sending out strong protests against the provisions of the Infectious Disease (Prevention) Bill. The trade contend that should the Bill pass in anything like its present form, dairy farmers in rural districts will be completely at the mercy of the local medical officer of health or any person authorized

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to act temporarily for him. In the circular issued by the British Dairy Farmers' Association it is pointed out that "Clause 5 empowers medical officers of health, by virtue of an order obtained from any justice of the peace, to inspect any dairy farm in his district and the animals thereon, and if in his opinion any infectious disease is likely to be caused by consumption of the milk supplied thereon, the local authority may upon his report immediately stop the supply of milk from such farm until the notice has been withdrawn."

This power, it is alleged, is arbitrary and inquisitorial. "The whole business of dairy farming may be stopped at once on the sole opinion of a medical officer of health, unsupported by any veterinary or other scientific authority." As the local authority is required by Clause 5 "to forthwith give notice of the facts to the sanitary authority acting in execution of the Contagious Diseases (Animals) Acts, 1878 to 1886, in the district in which such dairy is situate, and also to the Local Government Board and the county council," veterinary or other scientific authorities would soon have an opportunity of reviewing the opinion of the medical officer of health. Certainly the power to be conferred by Clause 5 is much needed. So long ago as January 1884 the North-Western Association of Medical Officers of Health, in a memorial to the President of the Local Government Board asking that a Bill might be introduced for the better regulation of dairies, prayed, *inter alia*, that "Any local authority may forbid and prevent the sale of milk by milksellers or dairymen coming from without the authority's boundaries when there is reason to believe the milk comes from premises infected or otherwise unfit for dairy purposes."

In the protest issued by the Metropolitan Dairymen's Society objection is taken to Clause 4, which proposes that on suspicion of milk infection by a medical officer of health, the local authority may require a full list of the dairyman's customers. As this very necessary power is already possessed and exercised by the sanitary authorities of many large urban districts, the protest of the dairymen comes a little late.

COMPULSORY NOTIFICATION OF INFECTIOUS DISEASE.

THE spontaneity with which local health authorities throughout the country—rural as well as urban, those for purely country districts as well as those for important and closely-populated towns — have hastened to avail themselves of the provisions of the Infectious Disease (Notification) Act of last session, is a great encouragement to sanitary reformers, inasmuch as it is a striking indication of the success of their efforts to educate public opinion in this matter. Although the Act has been in existence for little more than eight months, it has been already voluntarily adopted by more than a half of the local authorities throughout the country, representing an aggregate population of about 12,000,000. If to this be added the metropolis, with its 40 local authorities and 4,000,000 of residents subject to the Act, and the 56 large towns with an aggregate population of 3,751,257, where the powers have been obtained from time to time by separate and costly local Acts, we find that nearly 20 millions out of 26 millions, or upwards of three-fourths of the entire population of England and Wales, are already under the compulsory system. To have obtained this almost unanimous verdict in favour of compulsory notification is, perhaps, a sufficient justification for having, outside the metropolis, left the question of adopting the Act to the discretion of each individual authority. But it is to be hoped that the few authorities who have not yet adopted the Act will ere long follow the example of the majority, and thus save Parliament the trouble of passing a measure making the system uniformly applicable throughout the country.

Communications have reached us, however, which show that there are still localities in which the question is not fully understood, and that there are still opponents of the system who go out of their way to disseminate views which are mistaken, though, no doubt, well-intentioned, and which rouse the more selfish traits in the nature of individuals. It is still sometimes urged that compulsory notification will operate to the disadvantage, or even ruin, of the small shop-keeper. Yet, when the matter is examined from a practical point of view, it is obvious that the shop-keeper—whether his establishment be small or large—is one of the greatest gainers from the operation of the system. It must be borne in mind that notification to the sanitary officers is not notification to the public generally. Where the Act is judiciously administered the certificates are treated as confidential documents, and the sanitary operations are carried out with due secrecy. The most convincing evidence of this fact is the smoothness and absence of friction with which the system has been administered in such large towns as York, Newcastle, Salford, Huddersfield, Leicester, Nottingham, Torquay, &c. If there be a proper infectious hospital in readiness in a district, not necessarily of a large or costly kind, to which the first case of infectious disease in a household can be removed, and where every proper treatment will be provided for the patient, it is surely desirable from every point of view that the case should be at once removed there.

Moreover, the interests of the community deserve at least as much protection as those of the individual, and it can scarcely be seriously contended that a shop-keeper should be permitted to jeopardize the health or lives of his customers by retaining infection on his premises if he have not proper accommodation for isolating it. If he have ample accommodation, and there be no danger to the community, the sanitary officials will not interfere or divulge his secret.

"Personal rights" are treasures which require to be jealously guarded. But it must not be overlooked that in regard to infection, which spreads insidiously and through many channels, the "rights" of the community must outweigh those of the individual. Provided a person attacked by infectious disease has "proper lodging and accommodation" and means of isolation in his home, there is no power "whose fiat is sufficient to tear child from parent and husband from wife." To assert to the contrary, as is done in a widely-distributed tract, of which a copy is now before us, is to raise a false issue, and is bred from an unjustifiable fear of "the fetters of medical despotism."

There are so many and varying influences operating that it is difficult to show at present by statistics the full results of notification. But the following table which has been prepared by Mr. Farrow, the sanitary inspector of Leek, and which shows the experiences of that town in the matter, will be read with interest. Although the system of notification in Leek has been a voluntary one, it has been practically complete, and has been in force rather longer than the compulsory system of other towns.

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URBAN SANITARY DISTRICT OF LEEK.

Mean population, and number of deaths from all causes and notified causes, and the average annual rate of mortality to 1,000 living during 18 years before and after the adoption of notification.

Period of Years.	Before or after the adoption of Notification.	Mean Population.	Number of Deaths from							
			All Causes.	Notified Causes.						
				Small-pox.	Scarlet Fever.	Diphtheria.	Typhus, Typhoid, Relapsing, and Continued Fever.	Cholera.	Total Notified Diseases.
18 years 1854–71	Before	10,370	4,918	20	242	167	90	1	520
18 years 1872–89	After	12,614	4,850	2	95	7	50	1	155
			Average Annual Rate of Mortality to 1,000 living.						
18 years 1854–71	Before	10,370	26·21	0·107	1·296	0·894	0·482	0·004	2·785
18 years 1872–89	After	12,614	21·35	0·008	0·418	0·031	0·219	0·004	0·682

THE ABATEMENT OF SMOKE IN LONDON.

THIS Session of Parliament again finds a Bill "to amend the Acts for abating the nuisance arising from the Smoke of Furnaces and Fire-places within the Metropolis" brought in by Lord Stratheden and Campbell. His efforts to grapple with the evil have been both consistent and persistent. In May 1884 he moved his first Bill, proposing to give the Metropolitan Board of Works and the Commissioners of Sewers power to supervise the heating systems in all new houses and other buildings, with a view to their being made, as far as practicable, smokeless; to extend the area of the Smoke Abatement Acts, 1853–56, to the whole of the metropolitan police area, and include all the furnaces not specified in the said Acts; to repeal the exemption of the chimneys of private houses in the Sanitary Act, 1866, and to give the local authorities powers to make bye-laws for the restraint of smoke from the chimneys of private houses, subject to the approval of the Home Secretary. The second reading of the Bill was carried by a majority of more than two to one against the opposition of the late Government. But it was dropped at the end of the session.

In the following session the Bill was reintroduced, with some slight emendations, and its provisions and prospects were reviewed in the SANITARY RECORD of April 1885. It received some additional support, but was again dropped at the end of the session.

In 1887 a Select Committee* of the Lords was appointed to take evidence and report on the Bill. The closing of the session again defeated its promoter. At the next attempt he was again successful in getting a majority of the House in his favour on the second reading; but the Bill was referred to the Standing Committee, at whose hands it was so far emasculated that Lord Stratheden abandoned it, and elected to bring in the present Bill, with a view to get the House to reaffirm their repeated decisions as to the restraint of smoke from domestic chimneys.

* Parliamentary Papers, *Hansard*, Sept. 9, 1887.

The provisions of the previous Bill as to the extension of the area of the Acts of 1853–56 applicable to the furnaces of the metropolis and the steam vessels on the Thames, and the inclusion of the furnaces used in hotels, clubs, and other buildings not specified in these Acts, have been eliminated from the present Bill, and Lord Stratheden's object appears to be to secure the verdict of the House upon the single issue whether the smoke from the chimneys of private houses shall or shall not be brought under restraint.

While it is to be regretted that such important provisions as those for the extension of the area and the enlargement of the scope of the present Acts should have been thus abandoned, it is, perhaps, upon the whole, satisfactory to find that the issue is narrowed to the consideration of domestic smoke.

The attention of the House and the public will now be focussed upon the single question whether the domestic chimney is to be put on a par with the industrial chimney in the event of its producing smoke *needlessly*.

An objection was raised to former Bills that the proposal to invest the local authorities with powers to make bye-laws was insufficient to warrant confidence in the uniformity of treatment in the several districts of the metropolis, and it was argued by Lord Herschell and others that the inhabitants of any one district would not be benefited by the action of their own local authority if they were liable to the smoke of adjacent localities. This objection is removed in the case of the present Bill, which provides that "opaque smoke issuing from the chimney of any private dwelling-house, hotel, club, or eating-house, shall be an offence," and that "it shall be the duty of every local authority to cause to be made from time to time inspection of their district to enforce the provisions of this Act." The penalties prescribed are not less than 20s. nor more than £5.

At a superficial view this will, doubtless, appear so formidable as to call forth a storm of opposition. On closer examination, however, there does not appear to be any ground for hostility, seeing that clauses 6 and 7 of the Bill provide respectively that "where any person is summoned before any Court in respect of an offence against this Act, the Court shall dismiss the complaint if it is satisfied that the person so summoned has adopted all reasonable measures, regard being had to his means and condition in life, and has used due diligence and care to prevent, as far as possible, the emission of opaque smoke," and that "local authorities shall, previous to taking proceedings under this Act, deliver a notice requiring the person by whose act, default, or sufferance the offence against this Act arises to abate the emission of opaque smoke within a period of 14 days."

The prospect of any local authority taking harsh or hasty action is not to be seriously entertained, and this branch of the subject has already been reviewed at length (see SANITARY RECORD, April 1889).

The Bill further provides that "the London County Council may from time to time make, and when made, alter and repeal, bye-laws for requiring any fire-place or furnace intended to be used in any building to be constructed after the passing of this Act, to be so constructed as to consume, burn, or otherwise prevent as far as possible all smoke arising therefrom. And, as a whole, the Bill may be taken to embody sound and serviceable proposals for dealing practically with the vastly important reform which presses upon the attention of the inhabitants of the metropolis and of sanitarians generally with daily-increasing force.

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SANITARY ADMINISTRATION IN WINDSOR.

THE Royal borough of New Windsor is not one which could fairly be selected as a specimen of the best sanitation of which England is beginning to be proud. If the foreign visitor to Windsor Castle venture to stray, even but a little, from the main road, he will find within a few paces of the Sovereign's residence squalid courts and yards which are out of harmony not only with the proximity of Royalty, but with the general progress in hygiene which is marking the nineteenth century. Public attention has from time to time been directed in the columns of the SANITARY RECORD* to the unsatisfactory condition of the homes of the poor in Windsor, and the urgent need, both on physical and moral grounds, for prompt and drastic measures on the part of the local sanitary authority has repeatedly been pointed out. We are perfectly aware that there are considerable difficulties in the way of reform. The town is an old one, and, as such, it has inherited a legacy of faults from pre-sanitary times which it is no easy task to remedy. Efforts have of late been made to lessen the ill effects of that legacy, but in the direction of permanently removing the faults the progress has been somewhat slow. In the autumn of 1886 the borough was minutely inspected by Dr. H. Airy and Mr. Arnold Taylor on behalf of the Local Government Board, and eventually these inspectors recommended that—"(1) With regard to the sanitary defects existing in South Place, Garden Court, Distil House Row, Keppel Row, and several other courts, especially in point of through ventilation and outside air spaces, the sanitary authority should carefully inquire whether the requisite improvements can be obtained under the powers of the Public Health Act, 1875; and, if not, they should resort to the powers given by the Artisans' and Labourers' Dwellings Improvement Acts, 1875 to 1882, which now (by the Housing of the Working Classes Act, 1885, section 5) extend to all urban sanitary districts, for that purpose. (2) In order to secure more constant and thorough nuisance-inspection, the sanitary authority should appoint a separate inspector of nuisances. (3) The sanitary authority should make provision for the isolation of infectious disease, and for the disinfection of infected articles. (4) It is desirable that the sanitary authority should again take into consideration the question of providing a furnace for the destruction of house-refuse."

In order to ascertain to what extent these recommendations had been acted upon, Dr. Airy and Mr. Taylor again visited the borough a few months ago, and their report was recently issued. It gives full credit to the authority for having appointed an inspector of nuisances, and it also fully recognizes the energy which that inspector has displayed and the improvements which he has effected. But the Government inspectors justly point out that the unwholesome crowding of dwellings on insufficient area is the main difficulty in the way of improvement of the old house property in Windsor, and the authority have hesitated to apply to this evil the remedies which they possess. It is earnestly to be hoped that eventually the authority may be led to adopt more energetic measures for improving the unsanitary quarters of their borough. It is also to be hoped that they will ere long provide the infectious diseases hospital and the disinfecting apparatus, and also the refuse-destructor, which are much needed.

* See the SANITARY RECORD for Jan. 15, 1886, p 311; March 15 1886, p. 425; Aug. 15, 1886, p. 61; March 15, 1887, p. 403; Nov. 15, 1887, p. 221, &c.

THE HIGH DEATH-RATE IN NEWCASTLE.

CONSIDERABLE uneasiness has been caused in Newcastle by the continued increasing death-rate of the city, its average being nearly always in excess of those of the other large towns enumerated in the Registrar-General's weekly returns. For the week ending April 26 the average exhibited was 30 in the 1,000, in contrast to 20·7 as the aggregate of the 28 large towns, or to the average of 18 in the 1,000 shown in the same week by London, with its teeming millions of inhabitants of all grades, and where the poorest of the poor are so much *en évidence*. The thoughtful inhabitants of our northern city are much puzzled at these results. It is well known that Newcastle, from its physical situation, being built on an almost continuous declivity towards the banks of the Tyne, presents excellent facilities for perfect drainage, whilst its medical officer of health has been unremitting in his efforts to procure perfect sanitation for the inhabitants. A hospital for infectious diseases, second to none in the country, has been built at the outskirts of the city, whilst the drains and other factors of disease, over which the medical officer has immediate control, are ever under his vigilant inspection.

We fear no small blame for the disgraceful state of things in Newcastle is due to the inhabitants themselves, who are simply reaping the fruits of their own neglect of sanitary matters, despite the endeavours of those who are continually striving to teach them better, and so save many valuable lives every year.

There is probably no place out of London where so many families live in one house, particularly in the older parts of the city. Although many houses, more or less ornate and comfortable, have recently been built round the outskirts of the city (generally for two tenants), experience has shown that, as a rule, the labourer clings tenaciously to a home near the centre of the city, though it be but a bare single room and bereft of many conveniences which might be had for the same rent farther out of the city. We cannot hold the Corporation of Newcastle entirely guiltless in this matter, as during recent years they have pulled down some hundreds of houses in the Pandon and North Shore district, and not erected any in their stead, which proceeding doubtless has much aggravated the evil. Experience has shown, to a great extent, the inutility of thus attempting to drive men away, *nolens volens*, from the scene of their daily labour, and the result has been a great over-crowding in places left untouched by these improvements (?), with consequent detriment to the public health.

A short time ago a memorial, signed by nearly all the ministers of religion in the city, was presented to the council, wherein the evil effects of over-crowding and the existence of unsanitary houses near the centre of the city were significantly pointed out. At the request of the council, a deputation of the ministers, consisting of the Vicar of Newcastle, Canon Franklin, and the late Dr. Rutherford, agreed to furnish the council with evidence of the existence of evils, to which they were apparently strangers. The sudden death of Dr. Rutherford unfortunately prevented for a time the publication of the desired information, but probably some other well-informed person will be able to take his place. In the present lamentable state of affairs, it is more than ever essential that private interests and opinions should be ignored for the public good.

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NOTES OF THE MONTH.

A CARCASE CONDEMNED OWING TO INFLAMMATION OF THE LUNGS.

At Partick Police Court, Robert Steel Bell was charged with having, on March 19, exposed for sale the carcase of a cow suffering from inflammation of the lungs, and thereby unfit for human food. According to the evidence it appeared that a person named Ramsay bought the cow for a sound animal, paying a full price, on the 13th. Some days after, on finding that the cow was ill, it was arranged between Ramsay and the vendor that the animal should be killed, and the loss shared. On the 18th the animal was killed and found to be suffering from inflammation of the lungs and "caking" of the stomach. Ramsay believed the carcase was fit for food, and sent it to the defendant at the Partick slaughter-house. An assistant sanitary inspector, who examined the carcase, said, "he felt the smell of it in the open air," and a superintendent of police said the flesh was suspiciously dark, and smelt disagreeably.

Dr. Paterson, medical officer of health for the borough, said the appearance of the carcase was consistent with the presence of some disease, which would interfere largely with the breathing. Inflammation of the lungs would account for the appearance. He considered the flesh unsound, unwholesome, and unfit for human food. Two medical practitioners and a veterinary surgeon gave evidence corroborating that of the medical officer of health. A medical practitioner and four veterinary surgeons gave evidence for the defence, stating that in their opinion the carcase was fit for human food.

Mr. Alexander, in addressing the court for the prosecution, said that he did not ask that a penalty should be imposed; all that was desired was the protection of the public, and this would be accomplished if a warrant were granted to destroy the carcase. The court found the charge proved; the carcase was, when exposed for sale, unsound, unwholesome, and unfit for human food, and the order sought for to destroy the carcase was given.

COUNTY MEDICAL OFFICERS OF HEALTH.

Several county councils have, with commendable foresight, recognized the advantage to the public health to be derived from the appointment of county medical officers of health. They have realised the fact that there are a number of questions which they cannot satisfactorily deal with, and duties which they cannot efficiently perform, unless they have the assistance of a medical adviser skilled in the various branches of preventive medicine—questions and duties which have from time to time been indicated in these pages. But while this course has been adopted in several counties, in Lancaster, Worcester, the West Riding of York, and Stafford, it is to be regretted that in some localities in other counties opposition has been organized against similar proposals, the cry of "unnecessary expense" being raised without due account being taken of the useful work which is waiting in every county to be done by a county officer for the joint benefit of all the districts in the county and of public health generally—work which cannot be done by the frequently insufficiently remunerated though competent officers of the individual local authorities. It is, moreover, somewhat curious that the opposition to the appointment of a county officer has in a number of cases proceeded from some local sanitary authorities, thereby almost suggesting an anxiety to avoid the supervision or criticism of a higher authority, or of an officer who is not under their own control. There is little doubt, however, that as the attention of the county authorities comes to be more and more seriously directed towards sanitary matters, the need of county health officers will become more apparent and their appointment more general.

LEAD POISONING IN SHEFFIELD.

The extraordinary prevalence of lead poisoning in Sheffield and the places surrounding it has been the subject of inquiry by a Special Commission of the *British Medical Journal*, the results of which are set forth in interesting and carefully drawn reports now being published in our contemporary. From information furnished by a report from the local Medical Society and a Special Committee it appears that during the last two or three years more than 1,000 well marked cases of lead poisoning have occurred in the district, and a house-to-house visitation in one of the streets of Sheffield showed that every person examined, almost without exception, had the blue line on the gums, characteristic of lead poisoning. It is alleged, indeed, that this indication of the saturation of the system with lead could be found on the gums of nearly one-third of the population of Sheffield. In severer cases there were found the dropped wrist, paralysis, epilepsy, rheumatism, and other of the characteristic symptoms of the more intense forms of lead poisoning. The influence on child-bearing women was most disastrous, the number of miscarriages being extraordinarily great. The lead poisoning has been traced to one particular source of water supply, that furnished by the high-level reservoir. A further report examines the causes of this serious condition, and the best means of obviating it, with a criticism of those methods which are at present adopted by the local authorities, who are fully alive to the gravity of the situation, and who have consulted some of the most eminent chemical professors and sanitarians.

THE MEDICAL OFFICER OF HEALTH FOR WORCESTERSHIRE.

The Worcestershire County Council have, in the face of considerable opposition both from within and without the Council, appointed a medical officer of health for the county. The voting, however, was very close; 31 members being in favour of an amendment which proposed to strike out of the report of the Sanitary Committee all reference to the appointment of a medical officer of health, and 32 members voted against it. The Committee had recommended, as a person well qualified for the post, Dr. Harris, the medical officer of health for Sunderland; but their report was met by a further amendment in favour of the appointment of Dr. Fosbroke, the medical officer of the united sanitary district of Shotford, Alcester, and Evesham. The voting upon this amendment was equal, and the chairman giving his vote in Dr. Fosbroke's favour, he was formally appointed. The salary attaching to the office is £600 a year and travelling expenses. It was agreed to give Mr. Harris a

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solatium of twenty guineas in consideration of the expenses to which he had been put as the selected candidate. Under the circumstances the Council could scarcely have done less.

THE LONDON COUNTY COUNCIL AND THE WEIGHTS AND MEASURES ACT.

THE County Council have a very important duty thrown on them by the Weights and Measures Act of last session. They appear to have proceeded in their duties to put the Act in force with much discretion. Fourteen stations have been established and inspectors and officers appointed to each. The men engaged in selling small quantities of coal apparently take out about a ton and a half in each waggon in hundred and half-hundredweights. An inspector from his waggon with regulated scales can call upon the salesman to take down any one of each to be tested. Here a difficulty in detail at once arises. The ton and a half would be good weight as a whole, but in the smaller quantities shortness of weight—some few pounds—was often found, and great care had to be taken and discretion used against an injustice where no fraud was really intended. Many of the trolley men are respectable men, and fear loss of character and the infliction of fines by no real fault on their part, as they have nothing to do with the weighing. This has now been met by having the whole weighed. The number of persons charged before the magistrates and fined is exercising a wholesome deterrent. It is estimated that the loss to the poor by short weight was not less than £450,000 per annum, the larger portion of which will now be saved. The Act has now been in force since January 1, but we notice some coke waggons from gas-works without scales, to which the attention of the Council's servants must be at once called.

ROLLER-SKATING AT OLYMPIA.

THE revival of roller-skating, which was inaugurated at Olympia in the last week of April, is a welcome revival, if only regarded from a sanitary point of view apart from the amusement it affords. A great many people at the present day are rather apt to take too little exercise. This may be due in some measure to the cheap omnibus fares and cheap travelling in general, which induces them to ride instead of walking. Such an amusement, however, as the re-introduction of roller-skating, which is undeniably a healthful and beneficial exercise, may induce members of the fairer sex as well as of the sterner to supplement their present scanty exercise with one admirably adapted for physical development. It is a gentle but active exercise, and tends to improve the form and carriage. It imparts a grace of movement even to the most awkward. It is good for the nerves, the muscles, and the spirits. It has all the advantages of the gymnasium and ice-skating without being attended with as many dangers. There is no real danger in roller-skating, provided people set about it in a proper manner. No chasing or fast skating is allowed, and all skaters have to move in the same general direction. No sticks, canes, or umbrellas are allowed on the surface, and skaters are advised to take off their outside garments and wraps, in order to run no risk of catching cold through going out into the chilly night air whilst still in a glow. Another danger, of course, with roller-skating, as in other forms of exercise, is overdoing it. One hour a day is quite sufficient, and the exercise is then found to exhilarate and to offer relaxation; but if it is overdone, lassitude and unfitness for daily work are the consequences. Judging by the attendance of visitors during the first week, Mr. Ridgely, the enterprising pioneer of the present system of roller rink management, has the prospect of a successful season before him. No expense has been spared in fitting up the rink. It has been equipped with 10,000 pairs of the Raymond extension skates, a new invention, including the most modern ball-bearing styles, swifter than the fastest bicycles. The people employed number some 400, 50 of whom are told off as instructors. In conclusion, we must not omit to mention that the ventilation of the building is all that can be desired.

THE PUBLIC HEALTH

DURING APRIL 1890.

THE mean temperature during the month of April at the Royal Observatory, Greenwich, was 45°·6, and was 0°·4 below the average April temperature in one hundred years. An excess of temperature prevailed on nine days during the month, while on the remaining twenty-one days it was below the average. The coldest day of the month was the 10th, when the mean was only 39°·4, and 7°·5 below the average; the warmest day was the 30th, when the mean rose to 52°·2, and showed an excess of 8°·6. Rain was measured on fourteen days during the month under notice, to the aggregate amount of 1·7 inches, which corresponded with the average amount in the same period of sixty-one years. During the first four months of the current year the rainfall has amounted to 6·8 inches, which very slightly exceeded the average. The sun was above the horizon during 414·9 hours during April, and 141·5 hours of bright sunshine were recorded at Greenwich; this amount exceeded the average registered in the corresponding periods of the ten preceding years. The wind was easterly during the first five days of the month, after which westerly winds prevailed until the 12th; the wind was again easterly until the 20th, after which south-westerly winds prevailed until the end of the month.

In the twenty-eight large English towns dealt with by the Registrar-General in his weekly returns, which have an estimated population of nearly nine and three-quarter millions of persons, 28,705 births and 19,005 deaths were registered during the five weeks ending Saturday, May 3. The annual birth-rate, which had declined from 32·7 to 31·7 per 1,000 during the three preceding months, further fell to 30·8 during the month under notice, and was considerably below the average rate in the corresponding periods of the eight preceding years, 1882–89. In London the birth-rate was only 29·7 per 1,000, while it averaged 31·8 in the twenty-seven provincial towns, among which it ranged from 23·0 in Huddersfield, 24·2 in Brighton, 26·4 in Nottingham, and 26·6 in Bradford, to 38·1 in Manchester, 40·5 in Preston, and 40·6 in Newcastle-upon-Tyne and in Cardiff.

The rate of mortality in the twenty-eight towns, which had fallen from 25·7 to 23·3 per 1,000 in the three preceding months, further declined to 20·4 during the month under notice, and was 1·2 below the average rate in the corresponding periods of the eight preceding years, 1882–89. The lowest death-rate in these towns last month was 15·3 per 1,000 in Leicester. The rates in the other towns, ranged in order from the lowest, were as follow:—Birkenhead, 15·5; Nottingham, 16·0; Portsmouth, 17·1; Brighton, 17·2; Huddersfield, 17·7; London, 18·3; Birmingham, 18·5; Bristol, 18·6; Cardiff, 19·3; Hull, 20·0; Norwich, 21·2; Wolverhampton, 22·0; Bradford, 22·2; Oldham, 22·2; Plymouth, 22·2; Preston, 22·4; Salford, 22·7; Liverpool, 23·0; Sunderland, 23·0; Blackburn, 23·1; Leeds, 23·5; Halifax, 23·6; Derby, 24·8; New-

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castle-upon-Tyne, 27·3; Sheffield, 27·5; Bolton, 29·4; and the highest rate during the month, 30·7 in Manchester. While the death-rate in London last month, as above stated, was only 18·3 per 1,000, it averaged 22·2 in the twenty-seven provincial towns.

The 19,005 deaths from all causes in the twenty-eight towns during the five weeks of April included 1,954 which were referred to the principal zymotic diseases; of these, 791 resulted from whooping-cough, 488 from measles, 221 from scarlet fever, 176 from diphtheria. 164 from diarrhœa, 112 from "fever" (principally enteric), and 2 from small-pox. These 1,954 deaths were equal to an annual rate of 2·1 per 1,000, which was below the average rate in the corresponding periods of recent years. The death-rate in London last month from the principal zymotic diseases was equal to 2·3 per 1,000, while in the twenty-seven provincial towns it averaged 1·9, and ranged from 0·4 in Huddersfield, 0·6 in Preston and in Halifax, and 0·7 in Nottingham, to 2·5 in Manchester, 3·1 in Brighton and in Liverpool, 3·7 in Salford, and 6·0 in Derby.

Whooping-cough was the most fatal zymotic disease in the twenty-eight towns during the month under notice. The rate of mortality from this disease, which had been 0·93 and 0·83 per 1,000 in the two preceding months, was 0·85 during March, and corresponded with the average rate in the same periods of the eight preceding years, 1882–89. In London the death-rate from whooping-cough was as high as 1·04 per 1,000, while in the twenty-seven provincial towns it averaged 0·69, and was highest in Bristol, Oldham, Bolton, Salford, and Brighton. The death-rate from measles, which had been 0·26 and 0·42 per 1,000 in the two preceding months, further rose to 0·52 during April, but was considerably below the average rate in the corresponding periods of the eight preceding years. In London the rate of mortality from measles was equal to 0·67 per 1,000, while it averaged 0·41 in the twenty-seven provincial towns, among which this disease showed the highest proportional fatality in Liverpool, Plymouth, and Derby. The rate of mortality from scarlet fever, which had been 0·27 and 0·29 per 1,000 in the two preceding months, declined again last month to 0·24, and was 0·06 per 1,000 below the average rate in the corresponding periods of the eight previous years. In London the scarlet fever death-rate did not exceed 0·15 per 1,000, while it averaged 0·31 in the twenty-seven provincial towns, and was highest in Sunderland, Sheffield, and Manchester. The death-rate from diphtheria, which had been 0·25 and 0·22 per 1,000 in the two previous months, further declined to 0·19 during the month under notice, but, with one exception, was higher than that recorded in the corresponding month of any year since 1882. In London the death-rate from diphtheria was 0·23 per 1,000, while it averaged only 0·16 in the twenty-seven provincial towns, among which, however, this disease was fatally prevalent in Salford. The rate of mortality from diarrhœa was equal to 0·18 per 1,000, which was below that recorded in the corresponding period of any recent year. The death-rate from different forms of "fever" (including typhus, typhoid, and simple and ill-defined forms of fever), which had declined from 0·30 to 0·12 per 1,000 in the six preceding months, was again 0·12 during the month under notice, the lowest rate in any month on record. In London the rate of mortality from "fever" was only 0·07 per 1,000, while it averaged 0·16 in the twenty-seven provincial towns, among which this disease showed the highest proportional fatality in Norwich. Two deaths resulted from small-pox in the twenty-eight towns during last month, of which one was recorded in London and one in Hull; 6 small-pox patients were admitted into the Metropolitan Asylum Hospitals during the month, and 8 remained under treatment at the end of April. These hospitals contained 1,037 scarlet fever patients on the same date, against numbers declining from 1,569 to 1,035 at the end of the five preceding months; the weekly admissions during April averaged 80, against numbers steadily declining from 123 to 71 in the five previous months.

The rate of infant mortality in the twenty-eight towns, measured by the proportion of deaths under one year of age to registered births, was equal to 143 per 1,000 last month, and was slightly below the average rate in the same period of the eight preceding years. In London the rate of infant mortality was 139 per 1,000, while in the twenty-seven provincial towns it averaged 146, and ranged from 111 in Birkenhead, 117 in Portsmouth, and 126 in Wolverhampton, to 161 in Plymouth, 164 in Oldham and in Sheffield, 165 in Salford, and 178 in Derby.

The death-rate from diseases of the respiratory organs, judged by the metropolitan returns, was below the average during last month. The weekly number of deaths referred to these diseases in London averaged 346, and the annual death-rate was equal to 4·1 per 1,000.

The causes of 404 of the 19,005 deaths in the twenty-eight towns during the five weeks of April were not certified, either by registered medical practitioners or by coroners. These uncertified deaths were equal to 2·1 per cent. of the total deaths, which showed a slight further decline from the proportions in the two preceding months. In London the proportion of uncertified deaths was 1·1 per cent., while it averaged 2·8 in the twenty-seven provincial towns. The causes of all the deaths during the month in Plymouth and Birkenhead were duly certified, while the highest proportions of uncertified deaths were recorded in Halifax, Sheffield, Liverpool, and Huddersfield.

Among the population living in the outer ring of suburban districts around London, estimated at upwards of one and a quarter millions of persons, the death-rate from all causes during April was equal to 16·6 per 1,000, and was 0·5 below the average rate in the corresponding periods of the eight preceding years, 1882–89. During the five weeks ending May 3, 116 fatal cases of whooping-cough, 64 of measles, 39 of diphtheria, 15 of diarrhœa, 10 of "fever" (principally enteric), 8 of scarlet fever, and not one of small-pox, were registered in the outer ring; in all, 252 deaths resulted from these principal zymotic diseases, equal to an annual rate of 1·1 per 1,000, which was slightly below the average in the corresponding periods of recent years. Compared with the preceding month, the fatality of measles and of whooping-cough showed a marked increase. Of the 116 deaths from whooping-cough, 57 occurred in the registration district of West Ham, and 20 in Tottenham district. The 64 fatal cases of measles included 16 in Croydon, 20 in Tottenham, and 8 in Walthamstow sub-districts; and of the 39 deaths from diphtheria 6 occurred in Walthamstow, 5 in Willesden, and 4 in Hornsey sub-districts.

VENTILATION AND SANITATION.—The Leeds Co-operative Society, Limited, are at present erecting very large slaughter-houses with all the latest improvements, and special attention is being paid to the ventilation, which is being carried out by Messrs. Baird, Thompson & Co., ventilating engineers, London and Glasgow, their latest improved form of self-acting exhaust roof ventilator being used for the extraction of the vitiated and foul air. This firm has been fortunate in securing a very large and important heating and ventilating contract from the Japanese Government. The company's offices are also being ventilated by this firm. Extensive alterations and additions are in course of progress to the Belvidere Fever Hospital, Glasgow, for the City Corporation, and special attention has been paid to the ventilation, which is also being carried out by Messrs. Baird, Thompson & Co. This firm has just completed the ventilation of the new fever hospitals at Dundee and Paisley.

MESSRS. BAIRD, THOMPSON & CO. have opened splendid new offices and show-rooms at 165, Queen Victoria Street, London, E.C., and at 20, 22, 24, 26, Bath Street, Glasgow, where they show a large number of valuable improved patent appliances in connection with their business.

FOR the second year in succession no death from zymotic diseases occurred in St. Germans parish during 1889.

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Table showing Sickness and Mortality in 77 Sanitary Districts of England and Scotland during the Month of April 1890.

Sanitary Districts.	Estimated Population middle of 1890.	Small-pox.		Scarlet Fever.		Diphtheria.		Typhus Fever.		Enteric Fever.		Cholera.		Relapsing Fever.		Puerperal Fever.		Totals of Preceding Columns.		Annual Rate per 1,000 Persons Living.		Deaths from other Zymotic Diseases.				Deaths from all causes.	Death-rate from all Causes per 1,000 Persons Living.
		Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Ill-defined Fever.	Measles.	Whooping-cough.	Diarrhœa.		
Aberdeen	123,600	—	—	17	—	6	1	—	—	7	1	—	—	—	—	—	1	30	3	3·0	0·3	1	11	25	1	240	23·6
Accrington	40,000	—	—	7	—	2	2	—	—	—	—	—	—	—	—	—	—	9	2	2·7	0·6	—	—	1	—	48	14·6
Alverstoke	18,100	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	1	—	0·7	—	—	—	—	—	22	14·8
Ashton-under-Lyne	40,488	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	1	—	0·3	—	—	—	1	1	60	18·0
Barrow-in-Furness	50,000	—	—	3	—	—	—	—	—	16	1	—	—	—	—	—	—	19	1	4·6	0·2	—	—	4	—	69	16·8
Basford	51,000	—	—	18	—	—	—	—	—	1	—	—	—	—	—	—	—	19	—	4·5	—	—	2	3	—	61	14·6
Bilston	23,000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	42	19·1
Birkenhead	105,090	—	—	15	1	3	—	—	—	6	2	—	—	—	—	—	—	24	3	2·8	0·3	—	—	3	—	123	14·2
Birmingham	461,865	—	—	248	20	25	5	—	—	18	2	—	—	—	—	—	—	291	27	6·6	0·6	—	41	19	11	807	18·2
Blackburn	125,081	—	—	44	1	—	—	—	—	4	2	—	—	—	—	—	—	48	3	5·1	0·3	—	—	3	4	222	23·4
Bolton	115,846	—	—	75	3	3	2	—	—	5	1	—	—	—	—	—	—	83	6	7·5	0·5	—	—	18	1	306	27·5
Bournemouth	36,300	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bradford	240,515	—	—	15	1	5	—	—	—	2	3	—	—	—	—	—	—	22	4	1·0	0·2	—	3	6	3	511	22·2
Bristol	232,248	—	—	38	4	2	—	—	—	14	3	—	—	—	—	2	2	56	9	2·5	0·4	—	1	27	6	414	18·6
Burnley	95,000	—	—	21	1	1	—	—	—	9	3	—	—	—	—	—	—	31	4	3·4	0·4	—	—	4	2	176	19·3
Burton-on-Trent	48,473	—	—	23	1	1	—	—	—	5	—	—	—	—	—	—	—	29	1	7·3	0·3	—	—	2	1	74	18·6
Bury	61,000	—	—	2	—	2	1	—	—	1	—	—	—	—	—	1	—	6	1	1·3	0·2	—	—	2	1	103	22·0
Cambridge	41,070	—	—	—	—	3	—	—	—	4	—	—	—	—	—	—	—	7	—	2·1	—	—	1	1	1	54	16·0
Canterbury	21,704	—	—	1	—	—	1	—	—	1	—	—	—	—	—	—	—	2	1	1·2	0·6	—	2	1	—	24	14·4
Cardiff	117,012	—	—	23	2	5	2	—	—	4	1	—	—	—	—	—	—	32	5	3·6	0·6	—	1	1	2	177	19·7
Chatham	30,000	—	—	5	—	5	1	—	—	1	—	—	—	—	—	—	—	11	1	4·5	0·4	—	—	1	—	56	22·7
Cheltenham	47,200	—	—	—	—	—	—	—	—	4	—	—	—	—	—	1	1	5	1	1·1	0·2	—	—	—	1	77	17·0
Coventry	52,000	—	—	—	—	—	—	—	—	4	—	—	—	—	—	—	—	4	—	1·0	—	—	—	5	—	82	20·6
Darlington	39,000	—	—	25	—	—	—	—	—	2	—	—	—	—	—	—	—	27	—	8·4	—	—	2	—	—	57	17·8
Darwen	36,500	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Derby	100,871	—	—	10	1	2	2	—	—	8	3	—	—	—	—	—	—	20	6	2·6	0·8	—	33	9	—	186	24·0
Devonport	50,000	—	—	40	2	3	—	—	—	3	2	—	—	—	—	—	1	46	5	11·2	1·2	—	—	—	—	76	18·5
Dewsbury	33,000	—	—	3	3	—	1	—	—	2	—	—	—	—	—	—	—	5	4	1·8	1·5	—	—	—	—	56	20·6
Dover	31,483	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	1	—	0·4	—	—	18	1	—	69	26·6
Dundee	166,027	—	—	21	—	8	2	1	—	18	1	—	—	—	—	—	—	48	3	3·5	0·2	—	26	10	1	325	23·8
Edinburgh	271,135	—	—	76	5	24	4	—	—	21	3	—	—	—	—	—	—	121	12	5·4	0·5	—	36	25	2	469	21·0
Exeter	39,000	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	0·3	—	—	15	—	83	25·9
Gillingham	26,000	—	—	25	2	—	—	—	—	—	—	—	—	—	—	—	—	25	2	11·7	0·9	—	—	1	—	31	14·5
Gorton	41,000	—	—	13	3	8	1	—	—	6	1	—	—	—	—	1	—	28	5	8·5	1·6	—	—	1	1	65	20·7
Great Yarmouth	50,272	—	—	—	—	—	—	—	—	33	4	—	—	—	—	—	—	33	4	6·8	0·8	—	—	—	—	74	15·3
Greenock	79,312	—	—	10	1	5	4	—	—	—	—	—	—	—	—	—	—	15	5	2·0	0·7	—	1	6	—	133	17·5
Grimsby	55,000	—	—	29	2	2	—	—	—	4	1	—	—	—	—	—	—	35	3	7·7	0·7	—	3	3	2	94	20·8
Guildford	13,428	—	—	—	—	2	—	—	—	1	—	—	—	—	—	—	—	3	—	2·7	—	—	—	—	—	25	22·6
Halifax	82,500	—	—	16	—	6	2	—	—	—	—	—	—	—	—	—	—	22	2	3·5	0·3	—	2	—	—	159	25·1
Hanley	56,587	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Heston & Isleworth	25,288	—	—	3	—	—	—	—	—	—	1	—	—	—	—	—	—	3	1	1·4	0·5	—	1	1	—	30	14·4
Heywood	27,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Huddersfield	94,253	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hull	213,833	3	—	30	—	4	—	—	—	11	3	—	—	—	—	3	—	51	3	3·1	0·2	—	—	4	2	284	17·3

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Sanitary Districts.	Estimated Population middle of 1890.	Small-pox.		Scarlet Fever.		Diphtheria.		Typhus Fever.		Enteric Fever.		Cholera.		Relapsing Fever.		Puerperal Fever.		Totals of Preceding Columns.		Annual Rate per 1,000 Persons Living.		Deaths from other Zymotic Diseases.				Deaths from all causes.	Death-rate from all Causes per 1,000 Persons Living.
		Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Ill-defined Fever.	Measles.	Whooping-cough.	Diarrhœa.		
Jarrow	32,000	—	—	3	—	1	1	2	—	9	—	—	—	—	—	—	—	15	1	6·1	0·4	—	—	4	1	52	21·2
Keighley	29,660	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Kidderminster	26,000	—	—	2	—	—	—	—	—	2	—	—	—	—	—	—	—	4	—	1·9	—	—	—	—	—	20	9·4
Lancaster	28,301	—	—	3	—	—	—	—	—	2	—	—	—	—	—	—	—	5	—	2·1	—	—	—	1	—	43	18·5
Leamington	24,871	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Leek	14,057	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	0·9	—	—	—	—	—	26	22·5
Leicester	154,344	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Llanelly	23,559	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	1	—	0·5	—	—	—	2	—	32	16·5
Macclesfield	37,514	—	—	3	—	—	—	—	—	—	—	—	—	—	—	—	—	3	—	0·8	—	—	—	4	1	84	23·4
Manchester	379,437	—	—	136	23	29	10	—	—	29	4	—	—	—	—	6	3	200	40	6·9	1·4	—	8	17	11	853	29·3
Norwich	95,352	—	—	15	1	4	1	—	—	20	5	—	—	—	—	1	1	39	8	4·3	0·9	—	2	9	1	195	21·3
Nottingham	230,000	—	—	58	—	8	—	—	—	8	2	—	—	—	—	3	3	74	5	3·9	0·3	—	1	7	3	312	16·6
Oldham	146,716	—	—	50	4	1	1	1	—	9	1	—	—	—	—	—	—	61	6	5·4	0·5	—	—	18	3	313	27·8
Portsmouth	142,952	—	—	66	1	7	1	—	—	17	2	—	—	—	—	—	—	90	4	6·6	0·3	—	—	5	6	237	17·3
Preston	105,163	—	—	13	1	1	—	—	—	6	2	—	—	—	—	3	2	23	5	2·9	0·6	—	—	—	2	165	20·5
Reading	62,271	—	—	1	—	4	—	—	—	3	—	—	—	—	—	—	—	8	—	1·7	—	—	—	—	1	66	13·8
Ripon	7,670	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	1	—	1·6	—	—	—	—	—	17	27·0
Rochdale	73,773	—	—	12	—	—	—	2	—	1	1	—	—	—	—	2	1	17	2	2·8	0·3	—	—	1	—	102	16·8
Rochester	25,000	—	—	19	1	—	—	—	—	—	—	—	—	—	—	—	—	19	1	9·2	0·5	—	—	—	—	38	18·5
Rotherham	36,807	—	—	8	3	1	—	—	—	1	—	—	—	—	—	—	—	10	3	3·3	1·0	—	—	2	1	82	27·1
Rowley Regis	32,100	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	0·8	—	—	4	—	1	41	16·8
Salford	242,509	—	—	82	5	43	16	—	—	18	5	—	—	—	—	4	4	147	30	7·9	1·6	—	—	32	6	409	22·0
Scarborough	36,200	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	0·4	—	—	—	1	—	40	14·4
Sheffield	332,837	—	—	121	18	15	2	—	—	4	1	—	—	—	—	1	1	141	22	5·2	0·8	—	11	14	2	766	28·0
Smethwick	34,300	—	—	11	—	7	—	—	—	1	—	—	—	—	—	1	1	20	1	7·6	0·4	1	—	—	—	50	19·0
Southport	41,585	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Stafford	21,660	—	—	3	—	1	—	—	—	1	—	—	—	—	—	—	—	5	—	2·8	—	—	—	—	—	33	18·5
Stalybridge	28,184	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Stockton-on-Tees	50,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Stretford	21,000	—	—	2	—	1	—	—	—	2	1	—	—	—	—	—	—	5	1	2·9	0·6	—	—	—	—	31	18·0
Sunderland	136,506	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Swansea	93,700	—	—	44	8	—	—	—	—	5	1	—	—	—	—	1	1	50	10	6·5	1·3	—	24	5	3	195	25·3
Todmorden	25,750	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	0·9	—	—	—	—	—	45	21·3
Tynemouth	49,538	—	—	6	1	—	—	—	—	4	2	—	—	—	—	—	—	10	3	2·6	0·8	—	—	—	—	89	23·4
Wakefield	33,676	—	—	7	—	2	—	—	—	1	—	—	—	—	—	1	—	11	—	4·6	—	—	—	—	—	74	30·8
Wallasey	33,500	—	—	10	1	—	—	—	—	3	—	—	—	—	—	—	—	13	1	4·7	0·4	—	—	—	—	34	12·3
Warrington	50,000	—	—	7	—	—	1	—	—	—	—	—	—	—	—	—	—	7	1	1·8	0·3	—	—	—	—	108	28·2
West Bromwich	64,500	—	—	16	—	2	—	—	—	1	—	—	—	—	—	—	—	19	—	3·1	—	—	—	3	5	120	19·4
West Ham	180,000	—	—	47	1	10	2	—	—	7	6	—	—	—	—	1	1	65	10	4·4	0·7	—	—	25	3	252	17·0
Weymouth	14,134	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	20	17·2
Whitehaven	20,000	—	—	—	—	2	2	—	—	—	—	—	—	—	—	—	—	2	2	1·2	1·2	—	—	—	—	30	18·2
Widnes	31,000	—	—	10	—	—	—	—	—	5	1	—	—	—	—	1	1	16	2	6·3	0·8	—	—	—	—	55	21·2
Wigan	54,509	—	—	21	—	—	—	—	—	2	3	—	—	—	—	1	—	24	3	5·7	0·7	—	6	—	1	105	25·1
Willesden	57,158	—	—	14	1	7	4	—	—	2	1	—	—	—	—	—	—	23	6	5·2	1·4	—	2	9	1	67	15·3
Wolverhampton	83,407	—	—	15	—	1	—	—	—	1	1	—	—	—	—	—	—	17	1	2·7	0·2	—	4	4	—	134	20·9
York	75,327	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

NOTIFICATION OF INFECTIOUS DISEASES

IN 77 SANITARY DISTRICTS.

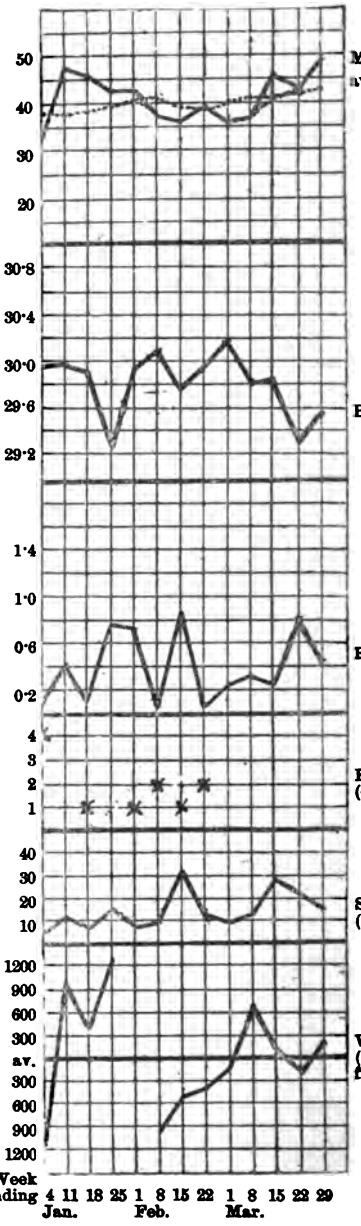
THE table on pp. 550 and 551 contains uniform statistics relating to sickness and mortality in 77 sanitary districts, including twenty-two of the largest English towns. The population of the towns for which we are enabled to publish complete statistics for the month of April is estimated at nearly seven millions of persons. The annual rate of mortality from all causes in these towns during the month under notice averaged 20·9 per 1,000 of their aggregate population, against 25·6 and 23·7 in the two preceding months. The rates of mortality during April were considerably below the average in Birkenhead, Canterbury, Gillingham, Heston and Isleworth, Kidderminster, Reading, Scarborough, and Wallasey; while they showed a marked excess in Bolton, Dover, Exeter, Manchester, Oldham, Rotherham, Sheffield, Wakefield, and Warrington. The death-rate from the eight infectious diseases dealt with in the table averaged 0·55 per 1,000 during April, against 0·66 and 0·74 in the two preceding months. No deaths from any of these infectious diseases were registered during last month in twenty-three of the 77 sanitary districts, whereas the rate of mortality from these diseases exceeded the average in Devonport, Dewsbury, Gorton, Manchester, Rotherham, Salford, Swansea, Whitehaven, and Willesden. Scarlet fever showed the highest proportional fatality in Birmingham, Dewsbury, Gillingham, Gorton, Manchester, Rotherham, Sheffield, and Swansea; diphtheria in Greenock, Salford, Whitehaven, and Willesden; enteric fever in Great Yarmouth, Norwich, Salford, and Wigan; measles in Aberdeen, Derby, Dover, Dundee, Edinburgh, Rowley Regis, Swansea, and Wigan; and whooping-cough in Aberdeen, Bolton, Bristol, Derby, Exeter, Jarrow, Oldham, Salford, West Ham, and Willesden. Four deaths from puerperal fever were recorded in Salford, 3 in Manchester, 3 in Nottingham, 2 in Bristol, and 2 in Preston. No fatal case of small-pox was recorded in any of the sanitary districts during the month under notice. With reference to the notified cases of infectious disease in these sanitary districts during April, it appears that the proportion of the population reported to be suffering from one or other of the eight diseases specified in the accompanying table was equal to 4·4 per 1,000, against 5·5, 5·2, and 4·7 in the first three months of the current year. No case of any of these diseases was notified during the month under notice in Bilston, Exeter, or Weymouth, and only one in Alverstoke, Ashton-under-Lyne, Dover, Leek, Llanelly, Ripon, and Scarborough; and while the proportion did not exceed 1·0 per 1,000 in Bradford, Coventry, Rowley Regis, and Todmorden, it ranged upwards in the other districts to 7·7 in Grimsby, 7·9 in Salford, 8·4 in Darlington, 8·9 in Gorton, 9·2 in Rochester, 11·2 in Devonport, and 11·7 in Gillingham. The high rates in the last-mentioned districts were due to the prevalence of scarlet fever Diphtheria was proportionally most prevalent in Chatham, Edinburgh, Gorton, Manchester, Salford, Smethwick, and Willesden; scarlet fever in Birmingham, Bolton, Burton-on-Trent, Darlington, Devonport, Gillingham, Grimsby, Manchester, Portsmouth, Rochester, Swansea, and Wigan; and enteric fever in Barrow-in-Furness, Dundee, Gorton, Great Yarmouth, Jarrow, Manchester, Norwich, Portsmouth, and Widnes. Six cases of puerperal fever were notified during April in Manchester, 4 in Salford, 3 in Hull, and 3 in Preston. Three case of small-pox were notified in Hull during the month under notice, but not one in any other of the sanitary districts.

THERE were no deaths from typhus or typhoid fevers nor diphtheria in the Totnes rural sanitary district during 1889, a fact which speaks well for its sanitary arrangements.

WEATHER AND HEALTH OF LONDON IN THE FIRST QUARTER OF 1890.

CONTINUING our diagrammatic presentation of weather and mortality (begun in January), we offer three curve pictures, relating (1) to various weather elements at Greenwich in the first quarter of 1890; (2) to the weekly mortality, in London, from phthisis and respiratory diseases; and (3) to the mortality from the chief zymotic diseases.

1. WEATHER.



In the two latter, as before, the actual deaths are indicated by a continuous curve, and the corrected averages by a dotted line curve.

These charts will readily tell their own tale, and extensive comment is unnecessary.

The curve of mean temperature reveals the generally

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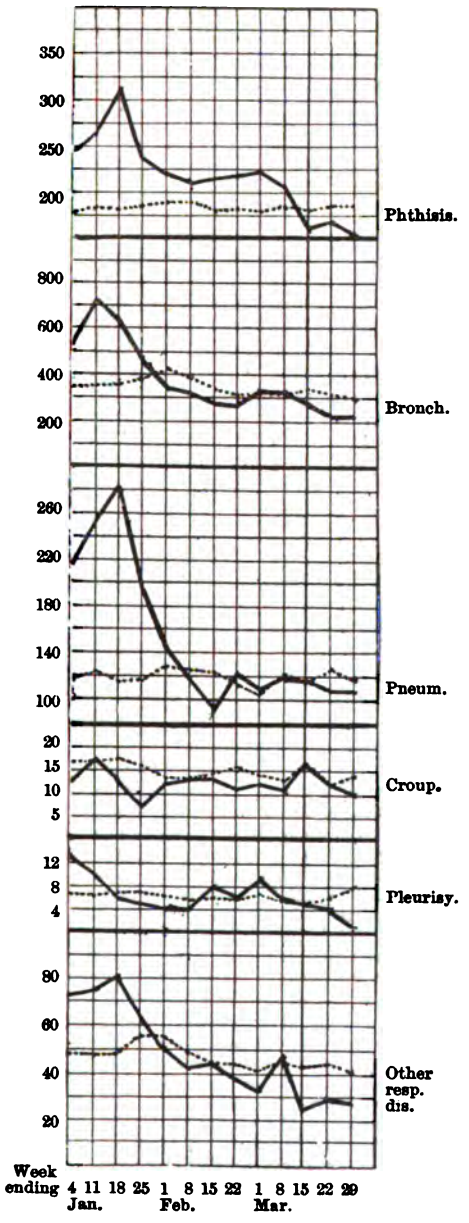
mild character of January and March, and the colder weather of February. Early in March, however (the 4th), a minimum of 13°·1 was recorded, which is the lowest on record in that month since 1845.

The blustering winds of January are recalled by the wind-curve,* showing a large excess. The barometer

2. Phthisis and Respiratory Diseases.



curve dips low in that month, as also towards the end of March.

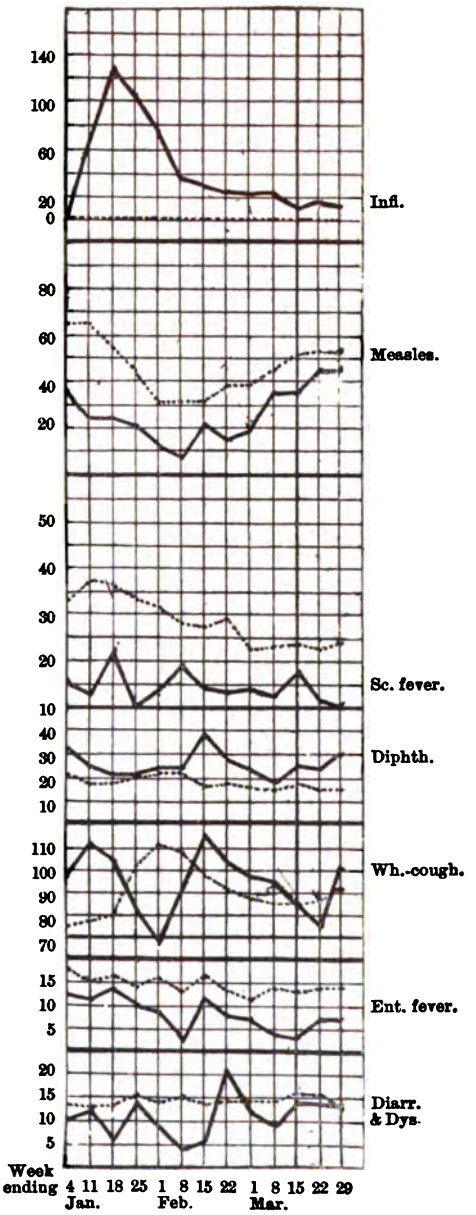
The rainfall during the quarter appears to have been near the average (slightly over).

While fog was excessive in the previous quarter, there was but little of it in this, and sunshine was unusually plentiful.

* The data are defective for the last week.

The most noteworthy feature of the mortality is, of course, the large and unusual share of influenza in its causation. With a weekly average not rising over 0·4 during the quarter, we find the numbers rise rapidly in the second and third weeks of January, reaching a maximum of 127; and the lowest point afterwards reached by the curve is 11, in the second week of March.

3. Chief Zymotic Diseases.



With this cause must doubtless be connected a good deal of the large and excessive mortality represented by the earlier portions of the curves of bronchitis, pneumonia, and other respiratory diseases. The deaths from phthisis have been in excess throughout nearly the whole of the quarter.

Of zymotic diseases, measles and scarlet fever show throughout a good record, and the diarrhœa and dysentery curve is in general below the average. On the other

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hand, the deaths from diphtheria have been throughout in excess, and there has been a general excess in the whooping-cough mortality; a curious inversion in the curve of the latter may be noted.

Only one death from small-pox is reported (in February), while the weekly average for this disease has ranged from 10·1 to 13·8.

(It is, perhaps, well to remind the reader that the scale in these diagrams is varied at convenience.)

SANITATION OF COAL MINES.—Dr. J. M. Fox, the Medical Officer of Health for the Combined Mid-Cheshire Division, in his recently-issued annual report, says the outbreaks of typhoid fever in Mount Pleasant reported from time to time, and not to be accounted for by any domestic conditions in the villages, led to an inquiry into the sanitary arrangements observed in coal mines. There is reason to believe, he adds, that they are very haphazard and far from satisfactory. A suggestion has been made in the present instance for improvement in this respect.

SPEAKING at a meeting of the Hull Corporation Sanitary Committee, Dr. Holder, after hearing a report as to rapid filling-up of the cemeteries, said he would soon be prepared to move that a crematorium be erected by the corporation at one of the cemeteries, where those who wished to do so could have their bodies cremated. He was quite sure that in a town like Hull, if they had a crematorium built—it would not cost more than £150 or £200—there would be many who would be burned simply from choice. There was nothing, he remarked, like fire to destroy the germs of disease, and only the destruction of the germs could prevent its spread. In that way a great deal would be done to avoid plagues. The sentiment in favour of cremation was rapidly growing, as illustrated by the increasing numbers who were being cremated at Woking.

SOAP IN INDIA.—We learn from the *Society of Arts Journal* that there is an ample demand for the increased use of soap in India, for at present, after allowing for local manufacture, it may be said of the people of India that soap is to them an unknown luxury, the consumption being at the rate of less than a shilling's worth for every hundred inhabitants a year. The imports of soap have, it is true, more than doubled during the last six years, and the trade is steadily increasing from year to year. It is not anything like a large trade even now, for the largest quantity yet imported, that of the year ending April 1889, reached only 74,000 cwts., the value of which was £102,289. The bulk of this was from England, the other European States supplying only a little over 3,000 cwts. The soap factories at Bombay, Jeypore, and Meerut are doing well and increasing their out-turn, and the local demand will most probably now go on increasing from year to year. The soap manufactured by these companies is much liked by the natives, and particularly that variety called "vegetable" soap is in much request. Hindus of the orthodox type would not touch a soap made of tallow or animal fat, as it is against the principles of their religion to do so. Such men and women in general, therefore, did not use soap at all, and contented themselves by cleaning their hands with simple earth, or the soap-nuts of species of *sapindus* and the legumes of *Acacia concinna*. Since the production of the vegetable soap the objection to the introduction of that article in the native Hindu household is overcome, and soap is beginning to replace the primitive clay and vegetable substances used. About 8,000 cwts. of native-made soap is now exported annually. The imports of soap of all kinds into British India have been as follows in the last six years:—1883–84, 34,447 cwts.; 1884–85, 38,075 cwts.; 1885–86, 49,804 cwts.; 1886–87, 59,016 cwts.; 1887–88, 61,139 cwts.; 1888–89, 74,072 cwts. The imports since this have, however, been declining. Of 500,000 cwts. of British soap which we exported in 1888, 75,275 cwts. went to India.

SPECIAL REPORTS, ABSTRACTS, &c.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.

THE evening of April 11 was, by previous arrangement, set apart for the consideration of the question "Should any charge whatever be made for admission to and maintenance in hospitals for infectious diseases, and if so, on what terms?"

The discussion was opened by the President, Mr. H. ARMSTRONG (in the chair), who said that he assumed that all were agreed as to the necessity for absolute freedom of admission to these hospitals for all persons, without distinction, who could not be effectively isolated at their own homes, so that the sole question before the Society was the expediency of charging for their maintenance those who were in a position to pay. On this it was desirable that the Society of Medical Officers of Health should give a decided opinion, as many sanitary authorities were, he believed, waiting for guidance, though the general tendency seemed to be towards more or less gratuitous maintenance. The infectious hospital at Newcastle, for example, the oldest in the provinces, was formerly in the hands of subscribers, and required the payment of 3s. a day; but since 1873, when it was taken over by the corporation, it had become practically free.

The question had a metropolitan and an extra metropolitan side, though, as regarded London, it was out of the control of the sanitary authorities. From a sanitary point of view nothing could be of greater importance than the utmost facilities for isolation of infectious patients, and consequently the removal of every impediment in the way of their treatment in special hospitals, which should be made as attractive as possible.

Once he thought that private patients should be required to pay, but his opinion now was that no attempt should be made to render these hospitals in any way self-supporting. Sec. 132 of the Public Health Act enabled the sanitary authority to recover payment from all patients, not being paupers, but was defective in not providing for the case of children who would always constitute a large proportion of the patients. If it were thought that some classes of patients should be made to pay, the difficulty of deciding which should be was by no means easy. Patients might be divided into the following classes: (1) Paupers; (2) poor persons, not paupers, unable to pay, admitted voluntarily or on the order of a magistrate; (3) domestic servants; (4) poor persons ill able to pay; (5) those well able to do so; (6) residents in hotels, schools and public institutions, police, workmen in firms providing medical attendance, &c.

He had sent a circular to a large number of sanitary authorities with a view to obtain information as to the actual practice in each place, and had received replies from thirty-two towns, which showed the greatest diversity in details though the general tendency seemed to be towards remission of payment. In some payment was exacted of the well-to-do, in others accepted as a free gift on their part. In some paupers only were paid for by the guardians. Some charged nominally for all, but gave discretionary powers to the medical officer or the managers to remit the payment. In many patients admitted from other districts only were charged, either personally or on their local authorities. In a few a charge was made for private wards or extra accommodation. At his own town a fixed subsidy was received from the guardians for paupers, irrespective of numbers, a charge was made for private wards, but all others were treated gratuitously.

The opinions of the Medical Officers of Health were in favour of entire freedom. At Salford, the abolition of payment had filled the hospital previously often empty; and their general feeling was against inquisition into the circumstances of individuals, and the allowance of special privileges to paying patients, which provoked discontent in those who paid, and jealousy in those who did not.

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Mr. Armstrong urged as an argument in favour of perfect freedom that the expense of maintenance was but an insignificant fraction of the total cost, including erection and administration, already borne by the authorities, and that the admission of such patients was not for their individual benefit, but for the protection of the general public, on whom therefore the burden should fall.

The detailed statements of Mr. Armstrong were then supplemented by the evidence of several provincial members present. Mr. HOLLINGSHEAD stating that, as the result of gratuitous admission, 68 of the 76 cases of scarlatina notified to him under the Act last year were admitted to the hospital, and the average deaths per annum had, since the operation of this rule, fallen from 10 or 12 to about 1 or 2.

Dr. BOSTOCK HILL, of Birmingham, said that he received 75 per cent. of all fever cases in the borough within a day or two of the notification of their occurrence, and that of the adjacent districts which, having no hospitals of their own, availed themselves of that at Birmingham, Sutton Coldfield, with a population of only 10,000, which made no charge, sent actually more patients than Aston Manor with 70,000 inhabitants but a graduated system of payment.

Dr. WOODFORD and Mr. THRESH gave an account of the means taken in their rural districts, in the absence of hospitals, for the isolation cases at their own cottage homes.

Dr. NEWSHOLME (Brighton) strongly condemned the practice of charging employers for their servants for whom they were not legally liable, and Dr. WILLOUGHBY urged that it could not but lead to their being sent to their homes, where they would be a danger to others.

Dr. WILLOUGHBY did not think that the practice of charging adjoining districts for individual patients, or contracting with them in any way, was satisfactory or equitable. It would be far better that with a view to gratuitous treatment they should combine to defray the entire cost of the establishment in proportion to their respective populations and resources.

Dr. DUDFIELD then traced the history of the provision for the hospital accommodation of infectious cases in London from the formation of the Metropolitan Asylums Board in 1867, and the negotiations, in which he had taken a prominent part, that had at length, after an agitation of fourteen years duration, ended in the admission of non-paupers, on the certificate of any medical practioner, without forfeiture of civil and political rights. He then moved a resolution, which was carried unanimously, that, as a corollary to the notification of infectious diseases, "Every sanitary authority should, either alone or in combination with others, provide a hospital for the gratuitous reception of any persons, without distinction, suffering from infectious diseases within the meaning of the Act."

THE ASSOCIATION OF PUBLIC SANITARY INSPECTORS OF GREAT BRITAIN.

THE ordinary monthly meeting was held on Saturday, May 3, at the Carpenters' Hall, London Wall, E.C. The Chairman, Mr. HUGH ALEXANDER, presided.

The minutes of the previous meeting were read and confirmed.

The following inspectors were duly proposed and elected members of the Association:—Mr. W. H. Austin, of Leamington; Mr. John Brook, of Stratford-on-Avon; Mr. M. W. Jameson, of South Hornsey. And upon the recommendation of the Council the following gentlemen were elected as associates:—Mr. W. H. Grigg, Chelsea; Mr. Frank Harris, Tunbridge Wells; and Mr. W. H. Smith, Bristol.

The SECRETARY said it was his duty to announce the death of another member, Mr. W. H. Wild, surveyor and inspector of the borough of Hertford. The announcement was received with regret, and a vote of condolence was passed and ordered to be sent to the relatives.

Mr. THOS. LOWTHER, deputy-inspector of nuisances of Bristol, then read a paper on

"DRAINAGE OF BUILDINGS, PUBLIC AND PRIVATE, AND ITS RELATION TO HEALTH,"

which will be published in the SANITARY RECORD of June 16.

THE NATIONAL ASSOCIATION OF SANITARY INSPECTORS.

A MEETING of the central council of this Association was held in the Town Hall, Huddersfield, on Saturday, April 26, when the following representatives were present:—Messrs. J. Newhouse, Chairman (Leeds), T. Prescott (Gorton), A. Baines (Manchester), W. Wilkinson (Altofts), D. Travis (Halifax), W. Wilkinson (Derby), A. Whitaker (Wakefield), W. Wilkinson (Salford), J. Maguire (Huddersfield), I. Sykes (Holmfirth), T. Patler (Ashton-under-Lyne), H. Denham (Tadcaster), and J. Lindley (Batley) Hon. Sec.

The CHAIRMAN and SECRETARY stated their inability to allow themselves to be again nominated for their respective positions, mainly through pressure of other work, and in their places Mr. Thomas Patler, sanitary superintendent, Ashton-under-Lyne, was appointed Chairman of the Central Council, Mr. D. Travis, chief sanitary inspector, Halifax, Vice-Chairman, and Mr. Jas. Maguire, chief sanitary inspector, Huddersfield, Hon. Sec. The thanks of the council were tendered to Messrs. Newhouse and Lindley for their services during their term of office, as also for their exertions during the formation of the central association, the present assured success of which is due in a large measure to their guidance.

The council decided that the annual meeting of the combined centres of the Association should be held in Manchester on June 14 next, when short papers of interest to the members will be read, and other matters discussed relating to the duties, positions, and welfare of members and the Association. The Right Hon. J. T. Hibbert, President of the Manchester Centre and Chairman of the Lancashire County Council, is expected to preside.

The council had under consideration the report of the deputation appointed to wait upon the Board of Examiners of the Sanitary Institute in Manchester, December last. The Secretary was instructed to make certain inquiries thereon, and report result at annual meeting.

THE HOUSING OF THE PEOPLE.

AN important conference was held at the National Liberal Club on April 30, to "promote a better understanding of the problem of the housing of the people, and to arrange for united action, parliamentary and otherwise, on the part of the organizations represented." The organizations in question were the National Reform Union, Allotments and Small Holdings Association, Financial Reform Association, London Liberal and Radical Union, Metropolitan Radical Federation, Mansion House Council on the Dwellings of the Poor, Working Men's Club and Institute Union, Leaseholders' Enfranchisement Association, Women's Liberal Federation, and the Political Committee of the N.L.C. Among those present were Miss Cons, Professor Stuart, Messrs. D. H. Macfarlane, S. Webb, S. Halifax, Chatfeild Clarke, Percy Bunting, J. Theodore Dodd, and Stewart Headlam. Professor Stuart was chosen chairman, Mr. Macfarlane vice-chairman, and Mr. Dodd hon. secretary.

The CHAIRMAN indicated points for discussion. First, he said, there was the question of sanitation. We suffered in this respect from inefficient machinery. The Government, it is true, proposed to consolidate the law; but that was not sufficient. Then there were the questions of the destruction of insanitary places, cheaper means for transferring land, compensation for destruction of premises, the re-housing of the displaced population, rebuilding on insanitary areas, housing the naturally increased population and those over whose heads all

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previous efforts had gone, the raising of funds, the provision of open spaces, wash-houses, &c., and the encouragement which should be offered to the poor to live in suburbs. The municipalities might give free passes for trains and trams to poor persons as a return for the concessions given to the companies.

Mr. B. F. C. Costello, L.C.C., delivered the introductory address on

"The Housing of the People in London,"

at the conference of delegates from various societies interested in that subject, which has been convened by the political committee of the National Liberal Club.

Mr. Costello began by saying that it was the object of the political committee (of which he is vice-chairman) that the conference should be rather a business meeting than a political demonstration. Sub-committees were to be appointed on each branch of the subject, and the purpose of what he had to say would be to lay a basis for some part of the work of one of those committees, by giving them some account of the experience which the London County Council has gained in its very earnest endeavours to deal with this vital problem.

It is singular, he said, how strongly such experience forces upon us the conviction that not even the outlines of the subject are yet apprehended by the public mind. The law is a labyrinth. The statistics and the economics of the subject are even to cultured persons an undiscovered country. The existing chaos, the bitter cry, the standing danger to health, to morals, and to social order, are patent to us all. But neither the reasons nor the remedies are so obvious.

Without theorizing, one general principle must be remembered. The pressure of an array of struggling people upon a very limited amount of accommodation is our chronic condition in London. So long as there is a demand by large masses of people anxious to live at the cheapest possible rent, without regard to the decencies of life, or the brutally inadequate character of the lodging supplied, so long it will be hard to keep up the standard of house accommodation. Probably the true problem is the ultimate one—to curb the bitter pressure of unlimited competition for sweated labour. But short of this there is a thing which we can put before ourselves as an ideal, namely, to set a legislative limit to the minimum requirements of the poorest people. As the true remedy for population problems is to lift the minimum standard of comfort, so the best help for the slums is to lift the standard of decency.

Legislation has a double province. It may and it should prohibit the use and letting of inhuman lodging places, as it prohibits the sale of unhealthy meat; or, indeed, as it already forbids cellar-dwellings and houses without drains. This is the sanitary branch of the subject; and the Consolidation Bill of the present Session is a useful step towards clearing it up. I only here suggest that it is high time the law boldly defined the minimum requisites of a human dwelling. This is partly done already by provisions as to nuisances and overcrowding. But the law should codify the necessary points of decent requirement, and should, with a view to the greatest lifting of the standard, enable the London County Council to legislate for this by bye-law from time to time. A beginning is already made in the vestry powers for regulation of tenement houses (which are found by the Council's recent returns to be largely a dead letter) and by the model regulations for artisans' dwellings lately approved by the London County Council. Make these, with due latitude compulsory, and you will stop the leak. That is, if you can induce the local authority to enforce the law, which can only be done by bringing home to the electorate their primary local duty.

But the province of the law nowadays is not merely preventive and punitive, but constructive also. The neglect—the very culpable and horrible neglect—of the whole community has given us the slums; and on the community there lies a corresponding duty to set them right. For this you require (1) power to close and to demolish the bad properties, in areas large or small; (2) ways and means to replace them with decent buildings suited to the needs of the most hardly pressed section of the people, with due remembrance of such further points as open spaces, baths and laundries, and other kinds of common provision for a decent life.

The existing Acts form three groups:—

a. Shaftesbury.
b. Torrens.
c. Cross.

Broadly speaking, "Torrens" has meant small areas worked by means of the vestry. "Cross" has meant large areas worked by the Metropolitan Board of Works; and "Shaftesbury" has meant nothing, for it has lain unused.

By the Shaftesbury scheme the local authority (and within the last few weeks the London County Council also) has powers, apparently extensive, to buy or hire land or buildings for housing the labouring classes. But they cannot do this by compulsion at all, unless it be by way of Provisional Order, and then they can only get it by going under the Lands Clauses Consolidation Acts, and compensating owners on that basis. This, it may be said at once, is hopeless.

It is supposed, though it is still a moot point, that if the London County Council has any cleared area on hand under any powers which do not limit its use, it can apply it to the purposes of the Shaftesbury Acts; but this is an unlikely contingency.

Here, then, the needed reform is obvious. We must have compulsory power to take such land by a cheap and rapid process, at a fair market price.

One thing they can do already, and possibly may do—that is, to hire land or dwellings, and use them for accommodation. They might lease houses now in the ordinary market, and convert them into lodgings. They could either work on such lines as those by which Miss Octavia Hill and Miss Cons have done so much for many slums, or they could create decent common lodging-houses under respectable and responsible control. To do such things in any way that meets the need, compulsory taking is obviously inevitable; and this ought to be also made subject to compensation clauses of what I hope will be by-and-bye the normal kind—namely, a fair market value, with no weight of legal costs, and with deduction for existing misuse of the property.

The chaos comes in when we pass to the Torrens' and Cross's Acts. Cross's Act is—

1. Only applicable to large areas—say, over 100 houses.
2. Only applicable where a high rate of disease can be shown.
3. Most expensive in the ultimate nett loss.
4. Hampered by the rigid rules as to the subsequent use of the land.

Most of the areas in London to which these conditions apply have been dealt with, at a loss to the ratepaying occupiers of the metropolis measured by millions; and with the absurd result that though the "re-housing" provisions have entailed great difficulty and vast expense to the rates, yet the result has generally been that the very poor were driven farther afield, and a different class of people housed in their place.

Torrens' Acts are—

1. Only enforceable by the local body, and on the motion of the local medical officer.
2. Open to be nipped in the bud by a delusive scheme of repairs.
3. Subject to an impossible appeal.
4. Applicable only when, house by house, the thing is so uninhabitable that you can demolish it.

There are a host of such areas now in hand, but it is intensely hard to deal with them satisfactorily, because of the less bad houses which are scattered up and down in every group.

Under these Acts it is true that a class of "obstructive houses" can be cleared, but that covers only those which render some other house actually uninhabitable.

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The most obvious remedies for Torrens' are—

1. Give the County Council medical officer and the County Council itself alternative power of representation and initiative, if the local body fails to move.
2. Keep the further carriage of the scheme, and the question of repairability out of the hands of the vestry (probably small house-owners), and out of the control of their surveyor: *e.g.* let the District Surveyor report on it to London County Council direct.
3. Give appeal to an arbitrator appointed by the London County Council or to some other such common-sense tribunal.
4. Allow a whole area to be dealt with, and intervening houses demolished, if needful.
5. Widen the definition of the "obstructive" house (the last two points would be subject to fair compensation terms and Provisional Order facilities).

The remedies for Cross's Act are—

1. To widen the terms of the preamble to be proved, so as to reach areas that are abominable, though not exactly murderous.
2. To import the same compensation provisions as in Torrens'.
3. To free the London County Council, being a popular and representative body, from too rigid compulsion to use that precise area for re-housing the same people, who could often be cheaper and better and more conveniently housed somewhere else.

In other words, the immediate policy in London would seem to be not to "consolidate" in a technical sense, but to unify and weld, in fact and practice, the different fragments of the existing scheme of law.

Let every area, great or small, be dealt with by a responsible central body—on the lines of Torrens' Acts as to compensation for bad property, and on the lines of Cross's Act as to clearing the whole of the affected area where necessary.

Let the vestry be deprived of any power of obstruction, while utilizing their local knowledge and responsibility. Let the minimum of toleration be raised to a reasonable pitch, as befits us now that the old schemes have lived their time. And let the whole be combined with vigorous compulsory and compensatory clauses under Shaftesbury Acts, and with a radical reform of the corporate machinery for street improvements, which would constantly work in with the clearance of a bad area. Bell Lane, Whitechapel, which is one of the most difficult cases now before the Council, is an excellent example of this. It could best be dealt with by a "street improvement"; but so long as that involves a penal cost, and so long as we cannot recover any of the "betterment," there is no chance of such a scheme.

It will be seen that the general lines of these suggestions cover the enactments of Professor Stuart's Bill, with certain other matters more germane to a law of consolidation. But, of course, nothing serious can be done without a change in the incidence of the charge. For that a special owner's rate is required; or, rather, as I think, an added municipal percentage on the death duty on realty, and with it a full recognition of the principle of betterment, when adjoining property not taken is increased in value by any scheme of improvement.

Into the great question of constructive action, whether and how far the municipality is to build, I do not now enter. But I feel that, for all the philanthropy and all the business enterprise, there is immense need of better housing at a possible rent. Especially do I think the common lodging-houses should be swept out and replaced as soon as may be. It is of great importance that the next census should give us the number of rooms now existing. When we have that figure, and its ratio to the local population, I think the question will then come to be not whether we should build, but how soon and how rapidly we can do it.

Dr. Louis C. Parkes, M.D., D.P.H., of the Mansion House Committee, spoke to the following effect:—It is universally acknowledged that "the sanitary question" is one of, if not the most, important question of all those which come within the province of a debate on the improved housing of the working-classes. Weekly tenants are powerless themselves to exert any improvement in the sanitary surroundings of their homes, so that the legislature long ago wisely determined to place very full sanitary powers in the hands of local authorities, trusting that the various sanitary Acts of Parliament would be so enforced by these bodies as to procure and maintain healthy homes for all those members of the industrial classes who are unable to help themselves in these matters.

The powers given to local authorities in the various sanitary enactments are not merely concerned with matters of drainage and water supply, and the suppression of nuisances injurious to health. Important as these powers are in their bearing upon the health of the population, they are supplemented by others which are more immediately concerned with the evils which arise from the aggregation of large numbers of poor people in the crowded centres of industry. The power to deal with over-crowding, to enforce a certain amount of cubic space for every person, to prohibit the occupation of cellar-dwellings, except under certain prescribed conditions, and to take proceedings before the magistracy for the closure of houses which, by reason of dilapidation or structural defects, are unfit for human habitation—these are the measures which, if thoroughly enforced, would go far to render impossible the description of those scenes of misery, neglect, and destitution, which so painfully attracted the attention of the entire community some five years ago. In addition to these large and arbitrary powers, there are those conferred by the Artisans' and Labourers' Dwellings Act, commonly known as Torrens' Act, which enables local authorities to secure the demolition of premises which are in such a state as to be injurious to health, and unfit for human habitation, and the Act of 1875, with a similar title, known as Cross's Act, which provides for the clearing of unhealthy areas, and the erection of improved dwellings by the co-operation of the vestries or district boards with the central authority, formerly the Metropolitan Board of Works, and now the County Council for London. The necessity for such powers as these and for their proper exercise, is sufficiently apparent when we consider that the greater portion of modern London was built at a time when the sanitary questions involved in providing sufficient external space for houses, in securing sufficient size of rooms and other details of architectural works, were not understood in the least degree, and when consequently houses were crowded together back-to-back in narrow courts and alleys, and built of such designs and such materials as would be considered scandalous in the present day.

Such being the facts with regard to the amplitude of the powers entrusted by Parliament to local sanitary authorities for the enforcement of wholesome conditions of lodgement for the working-classes, we are constrained to ask how is it that so little has been done in this direction, and who is responsible for the failure? The general verdict no doubt, would be that the failure is due to the ignorance, neglect, and supineness of the local authorities in not putting in force the ample powers for remedying insanitary conditions with which they are provided. With this verdict the Mansion House Council on the Dwellings of the Poor in London is fully disposed to agree. Its opportunities for arriving at a precise knowledge on this subject are so many and various that its opinion is entitled to all possible respect. At the same time it must be admitted that if the vestries are to blame, the ratepayers are responsible in the first place for permitting the election of men to the vestries and district boards, whose object in securing these seats is to further their own interests as tradesmen or petty contractors, or to take care when they happen to be owners of small tenement houses, that the Sanitary Acts are a dead letter so far as their own property is concerned.

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The Sanitary Acts cannot be enforced without a certain expenditure in salaries of inspectors and clerks, and in payment of costs where police proceedings are taken, and in other ways. Now the districts where sanitary interference is mostly greatly needed are usually the most poverty-stricken, and where the rates also are highest in proportion to rateable value, and there is a very great disinclination on the part of a body, whose members are often pledged to economy and reduction of rates, to place a further burden on the ratepayers for the enforcement of measures whose importance they do not understand, and whose capacity to make an ample return in improved health, greater wage-earning power, and lessened sickness supportable by the parish, is not appreciated.

Before any general improvement can be effected in the constitution of the sanitary authorities, or in amending the laws they administer, it is imperative that a healthy public feeling should be created as regards this great question, that public interest should be aroused, and that efforts should be made to educate the industrial classes in the importance to themselves of their homes being healthy and commodious. All this the Mansion House Council has endeavoured to carry out since its creation some seven years ago. Lectures have been given in many parts of the metropolis, and addresses to ratepayers have been widely circulated before the vestry elections, advocating the election of proper and fit men for vestrymen, and urging the throwing off of that apathy in municipal matters which makes municipal reform in London so much more difficult a matter than in provincial towns, where a far healthier public feeling prevails.

The following alterations in the methods of election of vestrymen would also conduce greatly to securing more efficient and purer bodies:—The qualification for candidates should be reduced from a £40 rating to £10. The vestry elections should be modelled on the same basis as the election of guardians (except as to proxy voting, which should be abolished), *i.e.* each year the whole number should be re-elected, instead of, as at the present time, one-third only retiring each year. The hour of meeting also of a vestry, which is now optional, should in most cases be fixed for the evening, to enable business men to give local affairs more adequate and constant attention. If these alterations were made, more attention and publicity would be obtained, the present farcical hole-and-corner elections would be rendered impossible, and freshly-elected men, zealous to perform their duties conscientiously, would not be thwarted and outnumbered.

A re-arrangement of metropolitan districts for sanitary purposes, with the object of enlarging the sanitary areas, would also greatly tend to remove sanitary administration from the influence of those petty local interests that are now too often exerted to retrain and harass it.

With the election of competent and willing vestries, the great obstacle in the way of securing those improved conditions of living for the working-classes, which all unite in desiring, would be removed. But certain alterations in the law to remove anomalies and secure more efficient working are also greatly needed. These have been summarised by the Mansion House Council as follows:—

1. Consolidation and simplification of the law; the very numerous existing metropolitan Sanitary Acts and their amendments being scattered through the statute books in a manner that renders their comprehension most difficult even to an expert.
2. Amendment of procedure with regard to nuisances; which would enable a vestry itself to do the work required to abate a nuisance and recover the costs from the owner, or to obtain a penalty from the owner on complaint before a magistrate when the vestry's order had been neglected.
3. Medical officers of health to be debarred from private practice, and their appointment, tenure of office, and control to be conjointly in the hands of the vestries and the County Council or Local Government Board.
4. Sanitary inspectors to hold a certificate of sanitary knowledge after examination from some public body, such as the Sanitary Institute, officially recognized by the Local Government Board. The medical officer of health as head of the staff to have the entire control of the inspectors. And the numbers of inspectors for each district to be compulsorily determined by the Local Government Board.
5. Vestries to be compelled to make and enforce regulations for the control of tenement houses (*i.e.* houses occupied by more than one family).
6. Registration of ownership, whether in chief or as lessee or sub-lessee, to be made compulsory in all cases; and local authorities to be empowered to compel the freeholder to insist upon the leaseholder maintaining the property at all times in a habitable condition.
7. Any vestryman or member of a district board, who is proved guilty before the Local Government Board of infraction of the Acts which such vestry or board has to enforce, to be *ipso facto* incapable of continuing a member of such vestry or board.
8. The restriction in the Nuisances Removal Act limiting the power of complaint before a magistrate to "an inhabitant" to be removed, the right to be exercised by anyone in the same way as the cellar-dwelling section of the Metropolitan Local Management Act, 1855.
9. District surveyors not to be called upon to prosecute offenders against the Building Acts at their own risk and expense.
10. Public mortuaries to be provided in every district.
11. Vestries not to be permitted to contract for the removal of dust, but to carry out this work by their own officers.
12. Water companies to be debarred from cutting off the supply of water from inhabited houses under any circumstances.

The Mansion House Council are also of opinion that for the efficient working of the Sanitary Acts the powers of the London County Council should be much enlarged, so as to empower it to set all sanitary statutes in operation where vestries are proved to have neglected their duties.

The County Council should also have the power of setting Torrens' Act in operation, independently of the local authority, in whose area the houses are situated.

Mr. FRED SCOTT explained the housing of the provincial poor, speaking from personal experience in Manchester and Salford, in a paper which will be published in the SANITARY RECORD of June 16.

The papers led to some interesting and instructive discussion; and then sub-committees were appointed to deal with the various phases of the question, and report to a future meeting of the Conference. During the latter part of the meeting Mr. Chatfeild Clarke took Professor Stuart's place.

VENTILATION.

ON March 27, a lecture under the auspices of the Dundee Institute of Architecture, Science, and Art was delivered in the Y.M.C.A. Hall by Mr. W. P. BUCHAN, Glasgow, on the subject of

"VENTILATION."

Mr. BUCHAN remarked at the outset that real ventilation meant not merely the motion of the air, but its renewal. Proceeding, he spoke of the necessity of proper air currents in all buildings, and in a very interesting manner explained the injurious effect of vitiated air on both man and beast, and how in many cases it caused disease, and, on the other hand, how cleanliness and fresh air favoured health and long life. The normal amount of carbonic acid in the atmosphere was four parts in 10,000. In occupied rooms it

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might soon rise to seven or eight parts in the 10,000 unless they were well ventilated. In this condition the air to a person entering the room from the fresh air felt musty and disagreeable. In a crowded and ill-ventilated ball-room, after the air had become vitiated by carbonic acid gas, a feeling of enervation ensued, which was not favourable to the physical work involved, and all rooms where dancing was carried on should be well ventilated, and especially if these were lighted by gas. Pure carbonic acid to a much larger extent than 10 or 20 parts in the 10,000 might exist in the air without being offensive. Dr. John S. Billings said that even as much as 15 parts in the 1,000 might exist, as in establishments where sparkling mineral waters were bottled, or where soda fountains were charged, or in vaults where champagne was bottled, in certain rooms in breweries, or in some celebrated baths and health resorts. These cases, however, were very exceptional. An occupied enclosure which might show good air in daylight might soon after darkness came on, if still occupied, and if lighted by gas, possess a vitiated atmosphere unless sufficient provision existed for carrying off the extra amount of air vitiated by the gas. A high standard of purity in the air we breathe should therefore be aimed at at all times, and especially in the sick and convalescent rooms. It was the exception to find bed-rooms with provision for carrying off the vitiated air at the ceiling. This was very short-sighted policy, seeing that people spent so much of their time in them. A person to be kept in full health required 2,000 cubic feet of air per hour—some doctors said 3,000 cubic feet. Now, as the cubic capacity of many bed-rooms was only about 1,500 cubic feet, or even less, how was 16,000 cubic feet of fresh air to be supplied for an eight-hours occupancy if there was no provision for ventilation? When they sent their children to school they should show their love for them by insisting that the atmosphere of the school-room should be pure and comfortable, and men should have sufficient chivalry for the sake of their wives and children, as well as common sense for their own protection and well-being, to see that means existed for keeping the air of their houses sweet and healthy. It was only too notorious that in the past all this had been too much neglected, but the demands for improved sanitation now being made augured well for the future. Mr. BUCHAN then described various systems of ventilation in common use, and pointed out their mistakes, particularly as in the case of M'Kinnell's ventilator, recommended by Drs. Wallace and Parkes, and which admits fresh air from the ceiling, and throws it upon the people seated in the inside of a building. He also described various systems of automatic ventilation suitable for houses, churches, and schools. Most of the schools he had examined had very inferior provision for ventilation. In fact in some of them it was merely nominal, and a disgrace to all concerned, the children sometimes turning sick, a teacher said, owing to the close and vitiated state of the atmosphere in the school-room. Continuing, he dealt with mechanical ventilation, pointing out the difference between the extraction and propulsion systems, and remarking that unless these were carried out in a proper manner they would be failures, as the automatic had so often been.

NOTES FROM THE NORTH.

(From our own Correspondent.)

THE drainage and sanitary arrangements at the Ingham Infirmary, South Shields, have been thoroughly overhauled, the drains being completely relaid on an improved plan, and will doubtless now afford complete satisfaction to all connected with that useful institution.

An effort is again being made in Gateshead to open the playgrounds attached to the Board schools for the use of the children after school hours.

Considerable alarm was shown recently at Newcastle from the fact that the fountain at Spital Tongues, in rear of the barracks, was found to be sadly polluted with sewage matter and not fit for use. By the energetic efforts of Mr. Laws, the city engineer, the evil has now been remedied, much to the satisfaction of the residents.

It is proposed to erect lavatories for ladies in different parts of Newcastle.

NOTES IN THE SOUTH AND WEST.

(From our own Correspondent.)

AN unfortunate dispute recently occurred at Plymouth in reference to the case of a seaman, named Alexander Alfred, suffering from small-pox, who was sent by the borough medical officer to the hospital ship *Pique*. The port sanitary authorities objected to receiving Alfred on the ground that they had only undertaken to receive small-pox cases in the event of the shore infirmary being full. The medical officer, on the other hand, affirmed that there was an arrangement in existonce between the urban and port sanitary authorities providing for the removal of such a case under the circumstances. Without venturing any opinion as to which side is in the right, it is earnestly to be hoped that a clear understanding will now be arrived at between the two authorities, so as to prevent any semblance of conflict in future.

According to Dr. Rowse, the medical officer, the sanitary condition of Appledore is radically bad. The death-rate last quarter was 30 to 32 per 1,000, but still the members of the Northam Local Board, in whose district Appledore is included, seem little disposed to shake off their lethargy and adopt heroic remedial measures. At a meeting on Wednesday, April 23, the whole matter was deferred until the next meeting. It would be well, perhaps, if the Local Government Board were to despatch an inspector to Appledore to assist the medical officer in arousing the authorities to a sense of their responsibilities.

Steps are being taken at Sherborne, Dorsetshire, with the view of purifying the water supply, and a report on the subject will shortly engage the attention of the local board, which has also taken measures to improve the housing of the labouring-classes by condemning two insanitary cottages, and encouraging the Cottage Building Company in their local operations.

A Local Government Board inquiry has been held at Portsmouth to consider an application by the local authority to borrow £1,200 for the purpose of building a new wing to the Infectious Diseases Hospital at Milton. It was explained that the extension proposed would provide two new wards, each having six beds, and the extra accommodation was required at once. The health of the town has been largely improved since the establishment of the hospital.

The insanitary condition of the city of Chichester has at length induced the Corporation to decide in favour of the adoption of a scheme of main drainage. Various officials from the Local Government Board have visited Chichester from time to time during the last quarter of a century, and they have been unanimous in recommending that the city should be drained. A good deal of opposition has naturally been manifested towards this drastic remedy, more particularly by large owners of property, and it has been only by active work among the ratepayers and by adducing conclusive proofs of the evil of the existing system that the drainage party, headed by Alderman Smith, the ex-Mayor, has succeeded in obtaining a majority of the councillors. At a recent meeting of the City Corporation, a resolution was carried by a majority of two appointing a special committee with instructions to prepare a scheme of main drainage for the city to be submitted to the council, the committee to have power to call in any such professional assistance as they may deem necessary. It is anticipated that the carrying into effect of a drainage scheme will involve an outlay of between £15,000 and £20,000, but as the step is, in the opinion of local medical men, and of all who are in a position to form an unbiassed opinion, absolutely necessary in the interests of the public safety,

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the ratepayers will hardly venture to complain of the expense.

The governors of Blundell's School, Tiverton, have decided to erect a sanatorium at a cost of £1,645, for the isolation of patients in the event of an outbreak of infectious disease among the 300 persons who reside at the establishment. This is a step which other large schools might advantageously imitate.

SANITARY MATTERS IN SCOTLAND.

Examination of sanitary inspectors.

THE Examiners of the Sanitary Association of Scotland met in the hall of the Royal College of Surgeons, Edinburgh, on April 23. There were 26 candidates, of whom the following 17 passed, and were granted certificates, viz.: — William Walker, sanitary inspector, Glasgow; Miles McInnes, Dumfries; William Fraser, sanitary inspector, Glasgow; William Miller, sanitary inspector, Glasgow; Robert Young, plumber, Duns; James Murray, builder, Dunvon; James Ferguson, teacher, Balbeggie; William Reid, sanitary inspector, Aberdeen; John Graham, sanitary inspector, Aberdeen; John Sim, inspector of works, Glasgow; James Salmon, sanitary inspector, Glasgow; Henry Watt, sanitary inspector, Glasgow; William Thaw, sanitary inspector, Glasgow; Robert Knight, jun., veterinary surgeon, Dunfermline; Charles O. Drysdale, engineer's clerk, Cathcart; William Campbell, surveyor and sanitary inspector, Oban; Neil Gillies, architect, Lochgilphead. The questions set and answers will be found on page 568.

The next examination will be held at Aberdeen in October.

Diagnosis of infectious disease.

The medical officer of Glasgow has taken the opportunity of two recent occurrences in the experience of the Sanitary Department to make some remarks on the "Errors in the Diagnosis of Infectious Disease." Both occurrences which he relates showed that two families suffering from typhus fever had been certified by medical practitioners as suffering from "enteric fever," "fever," and inflammation of the lungs. In the one instance there had been caused 21 cases of typhus and 3 deaths, and in the other 7 cases of typhus. During the six months ending December 31, 1889, there were 1,580 persons admitted to the wards of Belvidere Hospital. Of these, 67 were nursing mothers, and 14 were staff patients (non-infectious); deducting these there were 1,499 cases sent in as infectious. An analysis of these latter shows the following ratio of errors made by the medical profession:—

Diagnosed as	No. of Cases.	No. of Errors.	No. not any Infectious Disease.
Scarlet Fever - -	508	15	5
Measles - - -	386	3	2
Whooping-cough -	152	4	4
Enteric Fever - -	248	42	38
Typhus - - -	36	16	8
Diphtheria - - -	38	9	4
Erysipelas - - -	64	2	2
Puerperal Fever -	3	3	3
German Measles -	3	3	2
Fever - - - -	58	14	14
Various - - -	3	3	3
	1,499	114	85

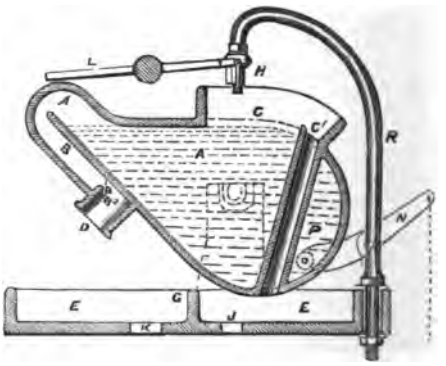
It will thus be seen that of the total number of cases sent in, certified as suffering from infectious disease, 114, or 7·6 per cent., did not suffer from the disease which was supposed by the certifying medical practitioner, and, likewise, that of the 114 no fewer than 85, or 5·7 per cent., of the total cases had no infectious disease at all, and should not have been sent to the hospital at all. Of persons sent in as suffering from "enteric fever," 17 per cent. were not so suffering, and nearly all of these had no infectious disease whatever. Of cases of "diphtheria," nearly 24 per cent. had not diphtheria, and nearly half of those had no infectious disease. Of cases cautiously sent in as "fever," 24 per cent. had no infectious disease whatever. "Of cases in which the practitioner ventured to condescend upon 'typhus,' he was wrong in fully 44 per cent., and in half of that proportion the case was not a case for hospital at all." Of the 42 cases erroneously designated enteric fever, 14 had inflammation of the lungs, 5 had simple diarrhœa, 4 had disease, 5 had various chronic diseases, and 4 had typhus fever, leaving a balance of 10 which were absolutely non-febrile. Of the 16 cases erroneously designated typhus fever, 3 had pneumonia, 1 had puerperal hemorrhagia, 1 suffered from alcoholism, while 3 could scarcely be said to have any obvious disease, and 8 had enteric fever. Where diphtheria was wrongly diagnosed, the disease in half the cases proved to be scarlet fever, and in the other half some form of simple inflammation in the throat.

These facts show that the mistakes by medical practitioners are by far too numerous, whilst making ample allowance for a certain proportion of errors, which, Dr. Russell says, is inevitable; but he states at the same time that to certify a person having "fever" or a febrile disease when the temperature is normal, and overlooking an obvious local disease, such as pleurisy or a pneumonia, which is sufficient to account for the fever present, cannot be excused. For other errors, he says, the only remedy is the training of the eye by the hospital bed-side, and the observation there of the mistakes of others, for there is as much to be learned in Belvidere from the cases which ought not to be there as from those which ought. The ample facilities at Belvidere now for the study of infectious disease leave little excuse for wrong diagnosis by practitioners.

ILLUSTRATED SANITARY PATENTS.

6,949. (1889.) IMPROVEMENTS IN FLUSHING APPARATUS FOR WATER-CLOSETS AND THE LIKE. JOHN MIDDLEHURST, 9A, Douro Place, Edge Lane, West Derby, Liverpool. [8d.]

The object of this invention is to dispense with the ordinary syphon or valve and ball-tap, and to substitute a movable flushing tank that is so constructed as to first give a full flush of water, and afterwards a lesser flush for sealing the basin or pan



The figure shows a section of the apparatus in its normal or filled condition. When the flush is required, the tank is released by a lever N, and then over-turns, so that the outlet D comes opposite an opening K, in a trough E, and after the great body of water has escaped a small quantity is still retained in the narrow chamber B by the stop B^1, in which is a small hole B^2, through which the small quantity of water slowly trickles, this constituting the after-flush. After this latter has escaped the tank again by gravity recovers its normal position, and in doing so raises the lever L, which opens the water supply. When the tank A is again full, it falls forward a slight distance, which is regulated by a stop cast on it coming in contact with the lever N; this causes the lever

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L to fall sufficiently to close the water supply, and so prevent waste.

C¹ is a waste pipe, and overflow water escapes through it to the trough E, and thence through the outlet J.

This apparatus may be adapted to automatic flushing for urinals and the like.

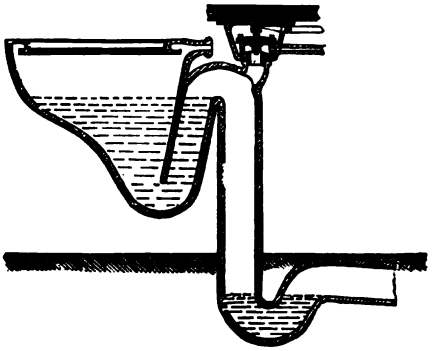
For more full and detailed description of this invention and its modifications and applications, we refer the reader to the above-quoted specification.

Claim.—The tipping tank and parts thereof as described in the specification quoted.

7,289. (1889.) IMPROVEMENTS IN WATER-CLOSETS. BURTON RICHARD PHILLIPSON, 10, Lower Baggot Street, Dublin. [6d.]

This invention relates to an improved description of water-closet which is also suitable for use as a slop-sink. It is provided with two water-sealed traps, having an air space between them, which is provided with a ventilation pipe carried to the open air.

On the course of the said ventilation pipe a valve chamber is fixed, and in the valve chamber a valve is placed which, under ordinary circumstances, remains open and permits free transit of air from the space between the water seals to the open. From the pull or lever which operates the water supply, an attachment is connected which closes the valve



The result of this arrangement is that when water is sent into the basin from the cistern, syphonage takes place, and the basin is discharged, but when water is sent into the basin by other means, as, for instance, from the emptying of a pail, no syphonage takes place, because the open valve admitting air prevents syphon action. This arrangement permits the use and discharge of a basin, which holds a considerable depth of water; it also gives great security against the entry of sewer gas through the basin by reason of the double seal and ventilation pipe between them.

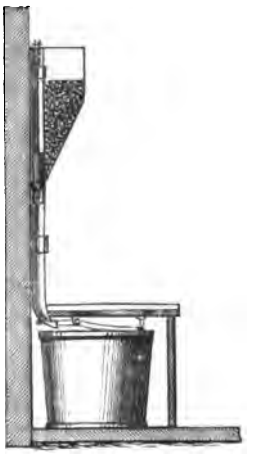
In addition to the above described contrivance, the valve may be actuated by suitable attachment to the closet seat; this effects automatic flushing, and by means of spring hinges, weights, or other suitable mechanism, the seat is kept in a vertical position when not pressed down for use, so that the apparatus is adapted for use as a slop sink.

Claim.—The apparatus, with the various parts described and illustrated in the above-quoted specification.

7,537. (1889.) IMPROVEMENTS IN DRY EARTH-CLOSETS. WILLIAM CONGREVE, and RICHARD BROWNSWORD, 34 and 36, Lower Hillgate, Stockport. [6d.]

This invention relates to dry earth-closets, and has for its object the more ready and uniform distribution of ashes or disinfectant on to the excrement than has heretofore been the case.

It consists in the use of a loaded valve inside a suitable hopper, to which is attached a conduit. Such valve is opened or raised by either a pull or seat action. And in forming the lower extremity of the conduit with a spreader situated underneath the closet seat so as to project the ashes or disinfectant on to the contents of the pail in a spray or thin layer.



The figure shows a sectional side view of the invention applied to a dry earth-closet with pail.

The hopper, or vessel which contains the ashes or disinfectant can be of any convenient shape, and may be fixed inside the closet to the back thereof as shown in the figure, or outside the closet were desirable at a level above the seat of the closet.

The loaded valve is employed to slide in a tube or casing attached to the inside of the hopper, and is formed with a conical face, the upper extremity of the conduit or the narrow part or outlet of the hopper forming its sealing, there being an open space left between the latter and the lower extremity of the tube or casing so as to allow the ashes or disinfectant to enter the conduit on the valve being raised.

The loaded valve is suitably connected to one end of a rocking lever, preferably by means of a rod and chain link, the other end having a chain provided with a handle attached, by means of which the valve can be raised. Or the respective end of the lever by suitable connections may be caused to be acted upon by the closet seat, or otherwise, as shown in dotted lines, as may be found most convenient.

Claim.—The loaded valve controlled as described, and in combination with the conduit with spreader.

19,309. (1889.) A NEW METHOD OF PRODUCING AND LIBERATING AERIAL OR GASEOUS DISINFECTANTS. GERALD TATTERSALL MOODY, 148, Wood Vale, Honor Oak, London, S.E., and FREDERICK WILLIAM STREATFEILD, Technical College, Finsbury, London. [4d.]

This invention consists in the novel mode of production of the free haloids for disinfecting inhalation and similar purposes by burning any desired quantity of haloid compounds dissolved in convenient media, as paraffin wax, oils, fats, and other combustible substances in the form of candles, tapers, night-lights, matches, pastiles, or in lamps.

The stability of the compounds employed is such that the candles, tapers, &c., can be kept for any length of time without deterioration, and the amount of halogen evolved can be regulated with great exactness by dissolving known weights of the halogen compounds, and by burning the candles, tapers, &c., for a definite time.

On burning the candle, taper, &c., containing the halogen compound, a very considerable portion of the halogen is liberated in the free state.

Claim.—The mode of production of free haloids in any required quantity by burning haloid compounds dissolved in some combustible medium.

19,940. (1889.) IMPROVEMENTS IN WATER FILTERS. JAMES DIXON, 21, York Place, Leeds. [6d.]

The filter which is the subject of this invention is

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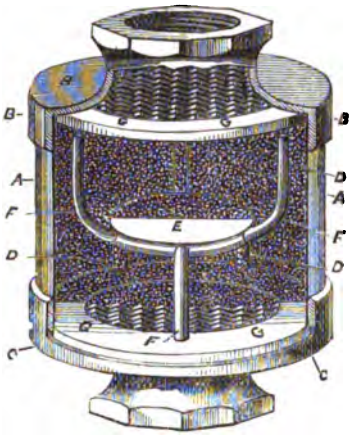
simple, cheap, and efficient. It can be placed upon any faucet, requires no refilling, and does not get out of order. The figure shows an internal view of the filter.



The case or shell A of the filter may be made of brass or other suitable metal, and nickel-plated inside and outside to prevent rust or corrosion; or the shell may be made of glass. The covers, or ends B and C, are constructed alike, and preferably screwed on to the case. thus dispensing with soldering or other complicated parts. The interior is filled with ground quartz D, which, not being absorbent, will not become foul if properly attended to, and it is also practically indestructible.

In the centre of the shell is employed a distributing disc E, which serves to spread the water to all parts of the filter. This disc is provided with arms F, which rest upon the metal rings G, such rings supporting wire screens or strainers H, provided at each end of the shell or case against the inward pressure of the water.

The filter can be reversed at pleasure for cleansing purposes, and the disc E, by throwing the water into all parts with considerable force, drives out all sediment deposited therein.

Claim.—The filter as described complete.

2,238. (1890.) AN IMPROVEMENT IN THE MEANS AND PROPORTIONS OF MATERIALS USED FOR THE DEODORIZATION, EVAPORATION, AND, TO A CERTAIN EXTENT, DECOMPOSITION OF HUMAN EXCREMENT, AND ITS TRANSFORMATION INTO A NEARLY INODOROUS AND VALUABLE FERTILIZER. CHARLES WESLEY DOUGHTY, Central Hotel, 722, Broad Street, Augusta, U.S.A. [4d.]

The material consists of calcareous marl, well dried and finely pulverized, and the means employed are ordinary privy boxes in closets, preferably provided with the means commonly used to produce circulation of air therein.

The marl is dried by artificial heat, and then ground about as fine as flour.

To properly use it, about 50 lbs. of the dried and pulverized marl is placed in an empty privy receptacle, and the latter is ready for use. The urine dropped upon it is absorbed, and the liquid in the solids is mostly abstracted by absorption from the dried marl underneath it and the dry air over it, and a few ounces of the powdered marl may, from time to time, be dropped upon the deposits.

The pulverized dried marl has the property of combining with and fixing putrescible matter, whether animal or vegetable, and preventing putrefactive decomposition. By this chemical action and evaporating process the fæcal deposit becomes dried about as fast as deposited from day to day, and the marl becomes charged with the concentrated mineral, animal, and vegetable elements of ten times its weight of fæcal matter.

To instantaneously deodorize and disinfect the composted privy boxes before removal, a few pounds of the following compound are dusted over its contents: artificially dried and ground calcareous marl, sulphate of iron, and chloride of lime, in proper proportions.

For urinals and closets, the marl may be used and dried again 8 or 10 times over, and thus be made to contain 20 per cent. of ammonia, which is thus richer than Peruvian guano.

Claim.—The material prepared and used in the manner described.

LIST OF APPLICATIONS FOR PATENTS

RELATING TO SANITATION.

FROM APRIL 2 TO APRIL 24, 1890.

[*This List is specially compiled for the* SANITARY RECORD *by Messrs. Rayner & Cassell, Patent Agents, 37, Chancery Lane, Holborn, from whom all further information relating to Patents may be had on application, gratuitously.*]

April 2.—No. 5,113. JACOB STILLING, 45, Southampton Buildings, London. Improvements relating to a method of destroying microscopic organisms, for disinfecting, and other purposes, and to substances used therefore.

No. 5,121. JOHN RING & JAMES KELLY, 9, Westland Row, Dublin. Improvements in flushing apparatus for water-closets.

No. 5,151. EDMUND EDWARDS, 35, Southampton Buildings, London. An improved paper shield to cover closet seats. (Gustav Wolff, Germany.)

No. 5,161. JAMES GILLESPIE, 96, Buchanan Street, Glasgow. Improvements in and connected with water-closets.

April 3.—No. 5,181. FREDK. CHAS. LYNDE, 25, Cross Street, Manchester. An improved coping and dish for gulley and other traps.

No. 5,184. WM. HY. WISE, Cobden Buildings, Corporation Street, Birmingham. Improvements in dust pans.

April 5.—No. 5,264. WM. BUTCHER, Spencer Place, Blackheath, Kent. An improved sanitary closet or privy. (Joseph Hargreaves, Australia.)

April 8.—No. 5,294. REUBEN BAILEY, 11, Handford Street, Derby. The sanitary protective enclosure of human remains.

April 9.—No. 5,405. JAMES ROBBINS, 52, Chancery Lane, London. Improvements in water and other pipes and conduits.

No. 5,419. JULES GUILLAUME, 151, Strand, London. Improvements in the treatment of organic matters.

April 10.—No. 5,446. JAMES ALLEN CROCKER, 52, Chancery Lane, London. Improvements in filtering machines.

April 11.—No. 5,495. CHAS. ED. GITTINS, St. George's House, 6, Eastcheap, London. Improvements in filters.

No. 5,507. SIDNEY CLARK, 11, Wellington Street, Strand, London. An improved cinder-sifter for domestic purposes.

April 12.—No. 5,588. RICHARD CHANTREY & WILLIAM HENRY PETERS, 59, Chancery Lane, London. Improvements in waste water preventers.

April 14.—No. 5,620. JOHN BOWDEN & SAM. HERN, 18, Fulham Place, Paddington. Improvements in the manufacture of soap for washing purposes.

April 19.—No. 5,917. SUSAN ARABELLA MACKIE, 27, Chancery Lane. Improvements in washing-machines

April 21.—No. 6,006. EDWARD SULLITOE, Earl's Colne, Coggeshall Road, Halstead, Essex. Improvements in washing-machines.

April 22.—No. 6,073. ERNST STORCH, 89, Chancery Lane, London. An improved slide or sluice valve.

April 24.—No. 6,225. TOM STREET, 292, Kilburn Lane, West Kilburn, London. An invention for the purpose of flushing sewers and drains, and to be known as an "automatic simplex syphon."

No. 6,252. JAMES LONGSHAW, 6, Bank Street, Manchester. Improvements in apparatus for filtering or purifying water, sewage, or other liquids.

SPECIFICATIONS PUBLISHED.—1889.

6,949. MIDDLEHURST. Water-closets, &c. 8d.
7,089. MILLAR. Drains. 6d.
7,537. CONGREVE & BROWNSWOOD. Dry earth-closets. 6d.
8,527. BLACK & RENNOLDSON. Disinfectants. 4d.
19,657. DAVIES. Flushing apparatus. 8d.
6,693. MARTINDALE. Ventilating cowls, &c. 8d.

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6,994. HARVEY. Clarifying sewage. 6d.
13,496. BAYLIS. Sanitary pipes. 6d.
9,103. MENZIES. Ventilating. 8d.

1890.

479. MARSHALL. Sewer inverts. 6d.
648. KNIGHT. Filters. 6d.

The above Specifications may be had from Messrs. Rayner & Cassell, Patent Agents, 37, Chancery Lane, at the prices quoted.

NEW INVENTIONS.

A NEW APPARATUS FOR THE ABATEMENT OF SMOKE.

MR. JAMES RIXON, bleacher of Bury Ground, Bury, has invented an appliance for smoke abatement, for which he claims the advantages of moderate price, easy adaptation to furnaces, and effectiveness, so far as it has been tried. Unlike the mechanical stokers there is no machinery required to keep it working, and no mechanism to get out of order. The appliance is a very simple one, and the wonder is that it has not been thought of before. A two-inch pipe is placed from the back to the front of the boiler. It passes through the boiler and the steam above the water level, and projects from the back where there is a bell-shaped attachment similar to that on wind musical instruments. This bell-like contrivance however is of no advantage, and is only placed in position to give a finish to the pipe. There is one pipe for each flue, and its object is to supply hot air to the furnaces. The pipe is brought in front of the boiler and enters the furnace just above the jamb of the furnace door. At a point above where the pipe enters the furnace a small steam injector is introduced into the air pipe, which has the effect of throwing the air on to the flames. The pipe terminates about two inches inside and at the top of the furnace, and the end is furnished with a peculiarly shaped nozzle having a curved lip to it. The effect of this simple contrivance is that the air passing from the back to the front of the boiler is thrown by the steam on to the coals in a strong current at the front of the furnace, causing complete combustion of the fuel; the nozzle is so shaped as to give the current a rotary motion, causing the flames to envelope the boiler on all sides. By this means the consumption of coal is saved by about 25 per cent., and not only that, but a lower quality of coal can also be used. Mr. Rixon has the appliance attached to his own boiler, and although he is anything but favourably conditioned with respect to the flue of his works and the chimney, as another factory also uses the chimney, a great difference was to be seen with regard to the emission of smoke when the apparatus was working and when not. The flue itself forms a half circle; when the apparatus is shut off there appears to be no draught in the furnace, while as soon as it is put into operation the fire burns round the flue as brightly and as merrily as possible. A large number of gentlemen interested in smoke abatement and connected with the manufactories of the district have seen the appliance, and all have expressed their admiration at its simplicity and effectiveness.

A NEW METHOD OF SEWER VENTILATION.

SUCCESSFUL as have been the works of sanitary engineers in most respects, it must be admitted that they have hitherto failed to solve the apparently difficult problem of sewer ventilation, and untold numbers of sewer gratings constantly emitting offensive and dangerous vapours into the roads of every sewered town and village under the breathing organs of the population unpleasantly proclaim the fact; it is therefore universally felt that the subject is one demanding the earnest attention of sanitary authorities and their responsible officers.

A very important and interesting experiment in sewer ventilation is now being made by the Portsmouth Corporation on one of the main sewers of the borough, under Mr. Murch, the Borough Engineer. The Drainage Committee ordered the experiment to be made some months ago, upon the advice of Mr. Boulnois, President of the Association of Municipal and Sanitary Engineers, the late Borough Engineer of Portsmouth, who, we understand, holds a favourable opinion of the invention; but, owing to his appointment as City Engineer of Liverpool, he has been obliged to leave the investigation and reports upon the system, as far as Portsmouth is concerned, to be made by his successor. The section of main sewer chosen for the experiment, and which borders on the Canoe Lake at Southsea, was selected by Mr. Boulnois as being in need of ventilation, and therefore as imposing a severe test upon the invention, the object of which is not only to ventilate the sewers, but, at the same time, to obviate the nuisance and danger to the public health which arises from the foul emanations escaping from the sewer gratings in the roads. Although all sewered towns suffer alike, the importance of the question as affecting the prosperity of a watering-place like Southsea cannot be over-estimated, especially as the low-level main sewer of this borough passes all along the sea-front from Portsmouth to Eastney.

Mr. Archibald Ford, Assoc.Mem.Inst.C.E., the Consulting Engineer to the Fareham Union Rural Sanitary Authority, and Mr. E. G. Wright, Ventilating Engineer of Portsmouth, are the joint inventors and patentees of the arrangement adopted; the pith of which consists in the provision to the sewer of a special air-passage which is disjointed at intervals, and by means of which the air currents is separated from the sewage flowing along the sewer; the friction of the water on the air current being thus obviated, the air current is found to be under certain control as to its direction, whatever may be the volume or velocity of the sewage flow; and, further, the powerfully disturbing influence to systematic sewer ventilation which Mr. Santo Crimp's important experiments have shown to be caused by the varying force and direction of the winds, is obviated, as the only connections to the outer air are at the uptake and downtake shafts, which are directly connected to the "special air-passage," and not to the sewer; the carefully-noted records, extending over three months (which we have had the opportunity of examining), conclusively show that the only effect of the wind, whatever the direction, was that as its force increased the ventilation of the sewer in the required direction was proportionately greater. Referring to our illustrations of the system, Fig. 1 shows a form of the "special air-passage" as applicable to large sewers, and Fig 2 to pipe sewers.

The application to the Portsmouth main sewer, which is 4 feet diameter and about 10 feet below the surface, is similar to Fig. 1; the system, as it is being adopted for the complete sewerage of a new building estate on Portsdown Hill, Cosham, Hants, is, with the "patent ventilating pipe," similar to Fig. 2 (the pipes being supplied by Messrs. Cardy & Co., of Heathfield, Newtown Abbott, South Devon, and made of the silicious stoneware clay of that district).

In the application to the Portsmouth main sewer the "special air-passage" is formed of galvanized steel tubes, averaging 5½ inches diameter and 2 feet 6 inches long, which are suspended from the crown of the sewer, and secured firmly thereto by a simple arrangement specially devised by the patentees.

The air-passage is carried along the top of the sewer (just clear of the headway) for a distance of 100 yards, and at the lowest end it is connected to a "downtake shaft" 6 inches in diameter (of the same material as the tubes), fitted in an existing manhole, and the outer air connection with this shaft is from the pit under the ordinary road grating, so arranged that all air passing down through the grating must pass into the air-passage. At the higher end (which, however, is only slightly higher) the air-passage is connected by a 9-inch stoneware pipe to a dwarf brick ventilating shaft, arranged to facilitate the taking of records this shaft standing on land at the side of the

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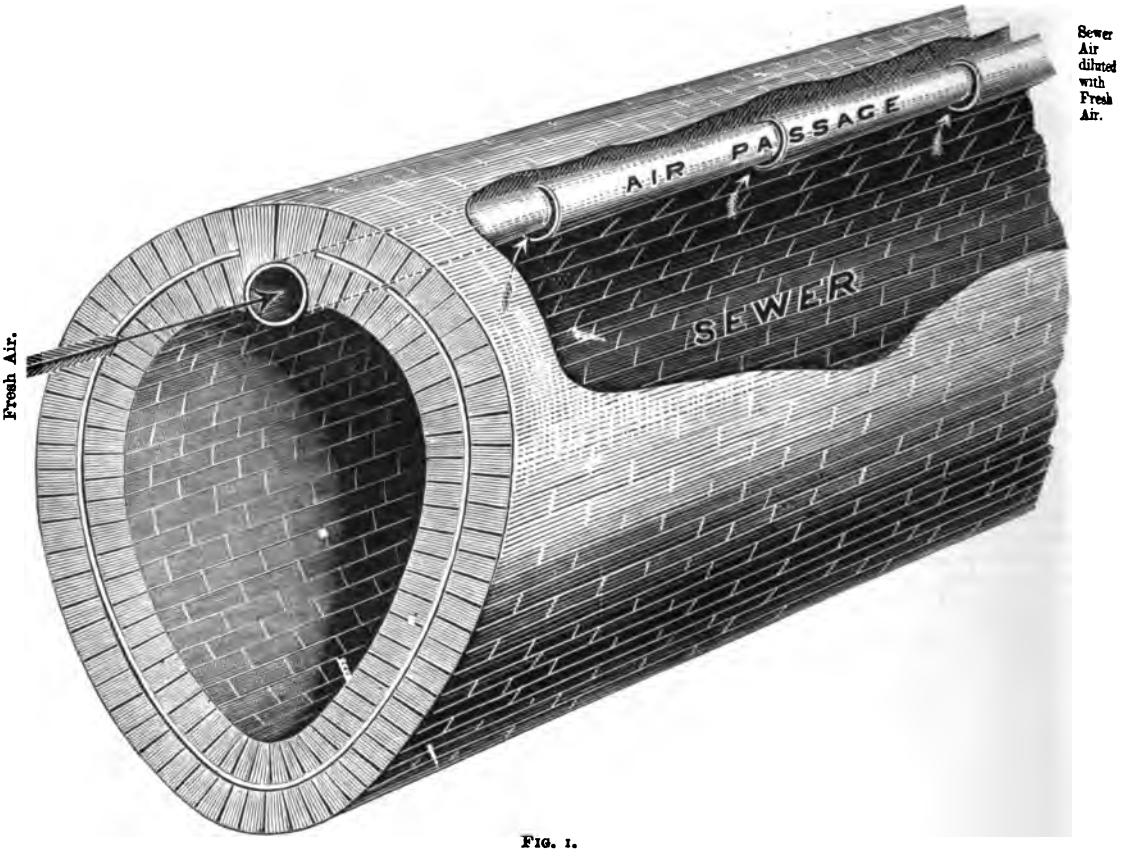

FIG. 1.

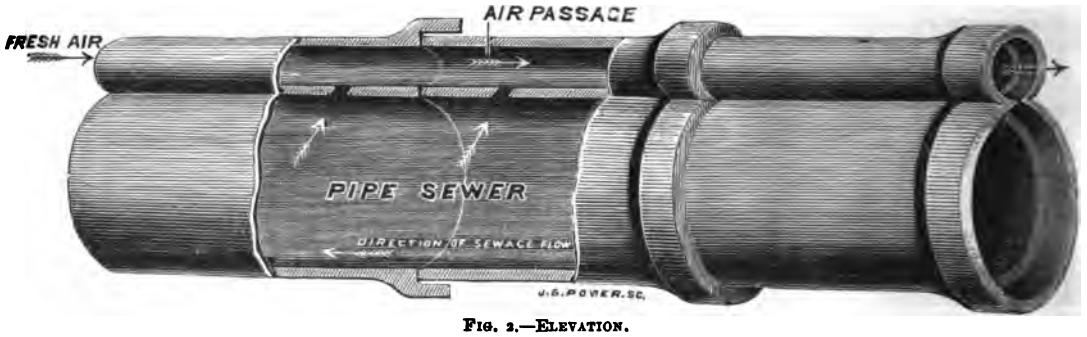

FIG. 2.—ELEVATION.

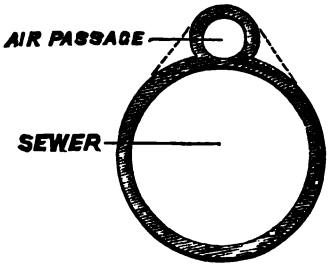

FIG. 3.—SECTION.

road about 40 feet laterally from the line of sewer; the arrangement is, in fact, similar to that now usually adopted for ventilating house drains, viz. a length of pipe with an uptake and downtake shaft, but in this system the pipe is disjointed at intervals, as shown, and the air current, instead of relying upon the comparatively feeble motive power caused by the difference in the height of the uptake and downtake shafts only, is provided for by the more powerful and certain action of a small jet of water, fitted in and discharging down the downtake shaft, the jet obtaining its supply under pressure from the adjoining water main.

Carefully-taken records show that with a jet consuming only 23 gallons of water an hour (as recorded by meter), a uniform and constant down current of air is maintained in the downtake shaft with striking uniformity, at velocities varying with the pressure in the water main from 330 to 390 feet a minute (as recorded by Negretti & Zambra's anemometer); this is equivalent to from about 4,000 to 4,500 cubic feet of fresh external air

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passed regularly and continuously into the air-passage, and distributed thereby along the sewer every hour, diluting the sewer air and forcing it in calm weather in its diluted state, at a rate varying from 1,716 to 2,492 cubic feet per hour, out of the uptake shaft, which, taking into account the depths of the sewage (which has varied when the experiments were taken from 15 to 30 inches), represents approximately, and with little variation, the entire change of the air of the hundred yard of sewer once in every hour.

The records, which had extended over the period since January last, covering some boisterous days, show that the best results have been obtained in the most windy weather, and that on no single occasion has the direction or force of the wind, or other atmospheric conditions interfered with the perfect and continuous action of the system of ventilation; an automatic ventilating action, indeed, appears to result from the arrangement, as, except in the calmest weather, it is shown that the system acted without resort to the water jet. The consumption of water is, however, so trifling that if its use, in conjunction with the special air-passage, so certainly prevents the escape of the sewer air at the road grating, and increases the sewer ventilation, as these experiments show, we imagine that sanitary authorities would gladly avail themselves of such a generally available and cheap means to secure such important results, and especially as the inventors show that the water can often be further utilized for flushing the sewers by collecting it in automatic flushing tanks, which tanks, they suggest, can be built to existing sewers, under the dirt pit of the road gratings, without disturbing the road surface.

Regarding the water consumption, the results at Portsmouth show that for each cubic foot of water consumed, 1,246 cubic feet of air can be introduced into and carried for a considerable distance along the air-passage, but in the application to small sewers less water would, we understand, be sufficient; and even possibly more striking and economical results may be obtained. These important experiments point to the conclusion that while the section of sewer to which the system has been applied is thoroughly ventilated by the systematic introduction of fresh external air, and stagnation of the sewer air is thereby prevented, the important point—viz. the prevention of the escape of sewer air at the road surface grating—has been absolutely secured; and they also show that the fresh air can be made to pass regularly and uniformly down road gratings, and the diluted sewer air out of the uptake shaft, which, of iron or other suitable material, similar to those already existing in many towns, can be carried up the front or back of buildings, or in other places adapted for the purpose; such pipes could, of course, have their outlets above that strata or zone of the atmosphere which must be breathed by the populations of our towns and villages.

There is no reason, that we can see, why in any special case provisions might not be made for the escaping diluted sewer air to pass through heat and flame obtained from gas in the upper part of the uptake shaft, but a continual change of the sewer air and the oxidising power of the outer air on numerous points of outlet, judiciously selected, would no doubt render the general adoption of such additional provisions unnecessary.

A complete installation of the system, with the "patent ventilating sewer-pipe," and specially arranged manholes and automatic flushing tanks, designed by Mr. Archibald Ford, C.E., one of the inventors, is, we understand, now approaching completion on a building estate at Cosham, Hants, and we hope to be able, in due course, to give the results of the arrangements, which, we gather, are especially designed to secure a continuous flushing of the sewers with fresh air every hour and with water about three times a day, while all the road gratings are to act as downtakes for fresh air; we may also be able to illustrate and explain what, under a general term, we may call the "double tube system of ventilation," as the inventors propose to apply it to drains and soil-pipes in connection with the drainage of public institutions and houses. We may content ourselves now by saying that, so applied, the inventors claim the following advantage to result:—viz. the protection of the fresh air inlet from the escape of sewer or drain air, by the prevention of a reversal of air current in the drains and soil-pipes on discharge from the house fittings, and also the prevention of the unsealing of water-closet and similar traps.

The records we have referred to show that the invention has so far stood the test of practical experiments at Portsmouth, and it appears to be based on common-sense principles. The inventors clearly take into account, amongst other points:—the well-known fact that air will always travel in the easiest direction, and by the special air-passage they provide an easy and natural way for it to travel:—also that water flowing with velocity in sewers or suddenly discharged down house drains, and wind force acting in certain ways, constantly upset existing sewer and drain ventilating systems, and provide by means of this air-passage and its working details protection from such disturbing influences.

LAW REPORTS.

HIGH COURT OF JUSTICE, QUEEN'S BENCH DIVISION.—April 22.

(*Before* Mr. Justice Cave *without a jury.*)

JAGGER *v.* DONCASTER UNION RURAL SANITARY AUTHORITY.

Mr. Tindal Atkinson, Q.C., and Mr. Rowland Wilkinson appeared for the plaintiff; Mr. Lockwood, Q.C., and Mr. Norton (with them Mr. Lawson Walton, Q.C.) for the defendants.

It appeared that the plaintiff, in making some additions and alterations to his dwelling-house, situated in Bentley-road, near Doncaster, had neglected to comply with the requirements of certain bye-laws of the sanitary authority, whereupon the authority, acting under the powers conferred upon them, demolished a part of the premises. In this action the plaintiff claimed an injunction restraining the defendants from a repetition of the acts complained of, together with £1,500 damages for injury to his property. Bye-law 55 provided that 15 square feet air space should be left open in the rear of any new building; and it was not denied by the plaintiff that he had failed to observe this, but he contended that he had entered into a binding agreement to purchase the ground on which the new part stood sufficient to satisfy the statute, and that therefore this bye-law did not apply to his case. But, even assuming that it did, the defendants exceeded it by demolishing beyond the 15 square feet, and were therefore liable for excess of damage. It was proved that the premises were unroofed beyond the proper limit, that the *débris* fell in, and that that part of the premises was left uncovered all night. The defendants admitted that the 15 square feet were exceeded, but contended that it was only to a necessary and inappreciable extent, though it was proved that a man was employed for 14½ hours in retiling the roof. They further alleged that specific instructions were given to the contractor not to exceed the 15 feet limit, and that if the Board's authority was exceeded, the Board was not responsible, this being a case of trespass. At an earlier stage of the proceedings the Board had summoned the plaintiff before the magistrates for not submitting a plan of the proposed alteration in accordance with another bye-law, when he was fined 40s.

Mr. Justice Cave, in giving judgment, said: The plaintiff contended that the proceedings of the defendants were wholly wrong, inasmuch as he had entered into a covenant with the owner of the adjoining land for its purchase; I think there never was any agreement between Jagger and the adjoining owner. There were negotiations, no doubt, but they never resulted in an agreement, verbal or in writing, and so the defendants were justified in

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pulling down such parts of the building as were not in conformity with the bye-laws. On the question whether there was an excess of damage, no doubt the persons employed did go beyond the part of the land which did not belong to the plaintiff, and as to that excess there was a default But the defendants, besides employing a contractor, in addition directed a servant of their own to assist in the demolition, and I do not find such circumstances as to make him a servant of the contractors. The sanitary authority would, therefore, be liable jointly with the contractor. It must be admitted that where a servant acts in the honest belief that he is carrying out his master's orders, and not acting for reasons of his own, the master is liable. And that is the present case. There is no suggestion that the servant thought he was going beyond his instructions—probably they were not sufficiently definite. Doubtless the parties engaged in unroofing the part abutting on Jagger's own land thought they were doing their duty, and so the sanitary authority is liable. What is the extent of their liability? I am satisfied that on the part abutting on plaintiff's own land there was no excess. The evidence in regard to that and the back was strikingly different. As to the portion standing on the plaintiff's own land, I have no doubt that a considerable part of the slates were stripped off, and for this the defendants would be liable. What is the extent of their liability? I am satisfied that the sanitary authority could not have pulled down that part without pulling down the whole, including the slates, and on that ground they are not liable. Jagger had persistently disregarded the bye-laws. He built, knowing he had no right. He was given an opportunity of either acquiring the land at the back or pulling down what he had built, but he did neither; and so the sanitary authority were right in saying that they had a right to pull down the part in excess, even if the whole should fall, and to do it in the most convenient way to themselves. They are not allowed to do it in a dangerous way, but consistently with safety may effect their object in the way they please. On another ground the defendants are not liable, for, assuming they were not justified in removing the tiles, yet no damage has been proved. The damage would have happened just the same from the dust and mortar, and as to any damage caused by rain the evidence was insufficient. On the whole, there would be judgment for the defendants.

MAY 5.

(*Before* LORD JUSTICE FRY.)

Lord Justice Fry, on behalf of himself and the Lord Chief Justice, who was absent through indisposition, gave judgment in the case of Giffard *v.* the Mayor and Corporation of Wolverhampton, which was an application to sequestrate the property of the Mayor and Corporation of Wolverhampton, on the ground that they had wilfully disobeyed an injunction granted so far back as August 1886, restraining them from permitting excrementitious, filthy, and noxious matter to flow from their sewage farm into Pendeford brook, polluting the water which runs through the plaintiff's land. His Lordship then went over carefully the various points in the controversy, and the evidence brought before the Court from time to time, on the occasions when application has been made to the Court on behalf of the defendant corporation for an extension of the time for the injunction to take effect. Samples of water taken from the brook had been brought before the Court, and from those samples he drew the conclusion that the water underwent a change of a very serious description, which could be accounted for only by noxious matter being permitted to flow into the brook. In conclusion, his Lordship held that the corporation, by not exercising due diligence since the injunction was first granted to abate the nuisance complained of, had been guilty of wilful negligence in regard thereto. He therefore now ordered that a writ of sequestration as prayed for be issued, but its operation to be suspended until November 1 next.

PARLIAMENTARY PAPERS ON SANITARY SUBJECTS PUBLISHED SINCE APRIL 15, 1890.

(*To be had of* Messrs. P. S. KING & SON, 5, *King Street, Westminster, S.W.*)

Births, &c., and Vaccination, Scotland.—Thirty-fifth Annual Report of the Registrar-General of the Births, Deaths, and Marriages registered in Scotland during the year 1889; and Twenty-fifth Annual Report on Vaccination. 8vo. ..... 5d.

Diphtheria. Dr. Bloxall's Report to the Local Government Board upon an Outbreak of Diphtheria at Berkhampstead, and upon the Sewerage of the Town. [No. 52.] .... 3d.

Leprosy. Report by Dr. Heidenstam on Leprosy in Cyprus ..... 1d.

Public Health. Annual Report of the Medical Officer of the Local Government Board for the Year 1888, with Appendices, being Supplement to the Eighteenth Annual Report of the Local Government Board. 8vo. 524 pp. Diagrams, Coloured Plates, &c. 8s. 9d.

Vaccination—Small Pox at Sheffield, Manchester, &c.—Abstract of Medical Inspections with regard to the Incidence of Disease and Local Sanitary Administration—Reports on Diphtheria, Enteric Fever, and Scarlatina in various places—Report by Dr. Ballard upon an Epidemic prevalent in Middlesborough, the most obvious character of the disease being Pleuro-Pneumonic Fever; with Report by Dr. Klein on certain Pathological and other Material forwarded him in connection with the same—Notes by Dr. Thorne Thorne on Recent Occurrences of Epidemic Cerebro-Spinal Meningitis in the Basin of the Mediterranean—Scientific Investigations—Further Report by Dr. Klein on Eruptive Diseases of the Cow—Report by Dr. W. B. Smith on the Differentiation and Identification of Micro-Organisms inhabiting Soft Moorland Waters that have been found to dissolve Lead, &c. &c.

Sweating. Fifth and Final Report of the House of Lords Committee on the Sweating System ..... 5d.

Water Companies, London. Accounts of the Metropolitan Water Companies for the year 1888; Population of Districts supplied, Quantity of Water used, and the Charges for the same, &c. ..... 3d.

Bills.

Factory and Workshop Act, 1878, *Amendment.* (F. Stevenson). ..... 1d.

Poisoned Flesh Prohibition. (F. Stevenson)..... 1d.

Salaried Shop Assistants. Weekly Half Holiday. (B. Maple). ..... 1d.

Shop Hours. (Provand)..... ..... 1d.

CORRESPONDENCE.

Audi alteram partem.

[*All communications must bear the signature of the writers, though not necessarily for publication.*]

SOME DEFECTS IN THE PUBLIC HEALTH ACT, 1875.

THE Public Health Act being on all hands admitted to be full of defects, it becomes of the greatest importance that officers engaged in working it should understand and make the most of such powers as it does confer.

I will once more, and for the last time endeavour to make clear how the paper bearing the above title is calculated to mislead your readers as to their powers.

Sect. 19 is alleged to be defective because it does not provide a right of entry on private lands traversed by a public sewer.

The omission is supplied by sects. 305, 306, so far as occasional entry is concerned.

The "continuous right to enter" now declared to be essential, or any other right "in or respecting a sewer" may be acquired under sect. 14.

Were this insufficient, full proprietary rights may be acquired outright under sects. 175, 176.

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Sect. 23 is condemned on the ground that it can only be worked by a legally appointed surveyor, and some rural authorities do not employ a surveyor. For the working of this section it is unnecessary to appoint a surveyor.

"Any person" the authority may choose to authorize to carry out work under this section acquires by such act of authorization the necessary powers. See sect. 4, "Surveyor includes any person appointed by a rural authority to perform any of the duties of surveyor under this Act."

The term any person would surely apply to an inspector.

Sect. 62 is declared defective because it does not provide powers for supply of water to isolated houses in urban districts, and on my pointing out that the deficiency has been already remedied by an Act amending the Act of 1875 (Public Health Water Act, 1878), under which an urban authority may acquire these powers, the writer of the article replies, ah! but my paper deals only with the Act of 1875.

I am obliged for this admission, also for the remark that "sects. 305 and 306 are not sect. 19."

Criticisms of any portions of an Act must, to be of any use, take into account other portions and Amending Acts supplementary thereto, in fact deal with the existing law as it stands.

The writer of the article under notice not only omits to do this, but on the omission being pointed out stoutly defends it. It would be impossible to frame any law that would not be open to objection if treated in this manner.

JOHN HOUGHTON,
King's Heath, Birmingham. Inspector.

COMPULSORY NOTIFICATION OF INFECTIOUS DISEASE.

As the Infectious Disease (Notification) Act, 1889, has now been adopted by nearly all the important urban and rural sanitary authorities, is it not advisable steps should be taken to have the Act made compulsory? Could not some influential member interested in sanitary matters be induced to bring this important and necessary matter before the House of Commons, either by introducing a short Bill or by asking Mr. Ritchie to do so.

London, May 1, 1890. SANITARIAN.

NOTICES OF MEETINGS.

TENTH INTERNATIONAL MEDICAL CONGRESS, BERLIN, AUGUST 4, 1890.

PRELIMINARY PROGRAMME OF THE SECTION OF HYGIENE.

1. WHAT measures seem to be necessary against the spread of diphtheria? Report: Dr. E. Roux, Chef de l'institut Pasteur, Paris. Prof. Dr. Löffler, Greifswald.

2. Sanitary and moral dangers of prostitution to the population. Measures against prostitution generally, particularly through international means. Report: Prof. Dr. Thiry, Brüssel; Prof. Dr. Kaposi, Wien.

3. Hygiene in establishments for the accommodation of numbers of people (houses of shelter, foundling-asylums, houses of correction, &c.). Report: Prof. Dr. Max Gruber, Wien; Prof. Dr. Erismann, Moskau; Sanitätsrath Dr. Baer, Berlin.

4. Tuberculosis. International measures against the spread of this disease. Report: Prof. Dr. Sormani, Pavia; Dr. Cornet, Berlin.

5. The increased appearance of typhus abdominalis, after intervals of years, in places which have been more or less free. Report: Dr. H. P. Walcot, President of the state board of health of Massachusetts, Boston, U.S.A.; Prof. Dr. von Fodor, Budapest; Dr. Ernst Almquist, medical officer of health at Gothenburg.

6. The maintenance of bodies of men in times of war and epidemics. Report: Prof. Dr. Forster, Amsterdam.

7. Are the opinions about the unwholesome influences of burial grounds still to be maintained and to what extent? Report: Prof. Dr. Franz Hofmann, Leipzig; Regierungsrath Dr. Petri, Berlin.

8. Mortality and nutrition of children. Report: Prof. Dr. Flügge, Breslau.

Announced introductory addresses.

1. The Etiology and Prophylaxis of Tetanus. Prof. Dr. Sormani, Pavia.

2. Venereal diseases with reference to medical control of the prostitutes. Prof. Dr. Neisser, Breslau.

3. Hygiene for railroad travellers. Dr. Ludwig Czatary Edler von Czatar, Sanitätsrath, Ober-Inspektor und Chefarzt der Kgl. Ungarischen Staatsbahnen in Budapest.

All communications concerning the business of the section must be addressed to Dr. Pistor, Berlin W., v. d. Heydtstr. 13. Other communications and inquiries must be addressed to Dr. Lassar, Berlin N.W., Karlstr. 19.

THE METROPOLITAN PUBLIC GARDENS ASSOCIATION.

A MEETING of members was held at 83, Lancaster Gate on May 7; the Earl of Meath presided, and amongst the new members elected were Sir John and Lady Millais. The Secretary announced that he had attended a deputation to the Charity Commissioners respecting Emmanuel Hospital, Westminster, and a public meeting about the preservation of the Hilly Fields, S.E. It was agreed to grant £50 towards the laying out of St. James' Churchyard, Clerkenwell, and to offer seats for the same ground; to ask the trustees of St. Bartholomew's Hospital to allow Bartholomew Square to be used as an open space; and to write to the Ecclesiastical Commissioners with regard to certain lands in Fulham. It was announced that the churchyard of St. Martin's-in-the-Fields was to be maintained in future by the vestry. Amongst many other important matters brought before the members may be mentioned proposed tree-planting in Hammersmith, Barking, Stratford, and Whitechapel, the preservation of Euston Square, the opening of the disused burial-ground of Christ Church, Spitalfields, the improvement of the ground in front of the National Gallery, the provision of banks of flowers in Trafalgar Square, and the purchase of the North Woolwich Gardens.

THE SANITARY INSTITUTE,

74A, MARGARET STREET, W.

AT an Examination held for Inspectors of Nuisances, April 17 and 18, 1890, 120 candidates presented themselves. Questions were set to be answered in writing on the 17th, and the candidates were examined *viva voce* on the 18th.

The following candidates were certified to be competent, as regards their sanitary knowledge, to discharge the duties of Inspector of Nuisances:—

Abbott, Arthur Robert, 93, Litchurch Street, Derby.
Baron, William, 23, Dunderdale Street, Maudland Bank, Preston.
Bond, George, 28, Kew Bridge Road, Brentford, Middlesex.
Chambers, M., Nella Cottage, Truro Road, Wood Green.
Clifton, Henry Charles, 50, Porchester Road, Bayswater.
Corrick, Alfred, 33, Pasley Road, Walworth.
Craven, Walter, Stamp Office Place, Wakefield.
Crocker, Thomas William, 15, Spring Gardens, Weymouth.
Davies, Thos. L., 5, Leopold Street, Burdett Road, E.
Dawson, William, 6, Brooklands Road, Birkenhead.
Dick, William, Kirknewton, Midlothian.
Folland, John Percy, 22, Liverpool Street, King's Cross.
Forrester, William, Headcorn, Ashford, Kent.
Gander, Henry, Shipston-on-Stour.
Gee, Charles, 38, Avenue Road, Brentford.
Gibbs, Arthur G., 12, Weston Road, Littlehampton, Sussex.
Graves, Matthew Dodgson, 7½, College Street, Minster Yard, York.
Groom, William E., Alpha Cottage, Wells Street, Camberwell.
Halstead, Robert, 301, Queensgate, Burnley.
Harris, Frank, Bidborough, Tunbridge Wells, Kent.
Holland, Percy, Fairstead Cottage, Newmarket.
Johnson, J. William, 785, Commercial Road, E.
Knight, Robert, jun., Abbot House, Dunfermline.
Lightfoot, Wm. C., 20, High Road, Knightsbridge.
Malcolm, Alfred, Clayton, Manchester.
Moody, Henry F., 20, Cavendish Street, Grimsby.
Mosley, Abraham, care of E. Law, County Surveyor, Northampton.
Nutley, Charles Vernon, 13, Dalling Road, Hammersmith.
Oliver, George, 14, St. John's Road, Waterloo, Liverpool.
Parham, John, jun., 33, Dalmain Road, Forest Hill.
Perman, Edward, 3, Railway Street, Newport, Mon.
Quaintrell, Henry, Elmsleigh, Phillip Lane, Tottenham.
Ridler, Walter, 13, Dean Street, Bedminster, Bristol.
Buscoe, Ernest Henry, 6, Great Castle Street, W.
Saunders, Percy, 29, The Drive, Thornton Heath.
Savory, Charles, 6, Holford Place, W.C.
Simpson, John, 30, Belmont Street, Aberdeen.
Smith, Joseph Sydney, 86, Alvey Street, Walworth.
Smith, W. H., 60, Alma Vale Road, Clifton, Bristol.
Taylor, James, 10, Mount Pleasant, Waterloo, Liverpool.
Thomas, George, R.E. Office, 162, Coventry Road, Birmingham.
Thompson, John Rishton, 75, Bridgman Place, Bolton.
Tomkins, Alfred, 62, Church Street, Camberwell.
Turner, Alfred, 36, Guildhall Street, Folkstone.

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Walker, Francis, 18, Mardell Street, Shepherd's Bush.
Walker, Wm. Snowball, Osborn House, Cann Hall Road, E.
Wallis, Arthur Gray, 46, Talbot Street, Southport.
Wansbrough, Cecil Shartman, Arlington Villa, Barrow-in-Furness.
Wharton, Henry, 5, Norway Street, Waterloo, Liverpool.
Wrack, Thos. P., 15, Great Alie Street, Whitechapel, E.

EXAMINATION FOR INSPECTORS OF NUISANCES.

HELD APRIL 17 AND 18, 1890.

QUESTIONS AND ANSWERS.

Question 1.—Give a summary of the enactments in force enabling authorities (*a*) in the Metropolis, (*b*) in the Provinces, to enter upon premises, and examine drainage.

Answer.—(*a*) (1.) Where a house in the metropolis is without a sufficient drain, the local authority are empowered by section 73 of the Metropolis Local Management Act, 1855, to require construction of a drain, and to enter and examine during construction.

(2.) Section 75 of the same Act gives similar powers in the case of houses in course of erection, or being rebuilt.

(3.) Entry may be procured, and examination made whenever it may be necessary under section 82 of the Act (which is somewhat similar to section 41 Public Health Act, 1875).

(4.) Power of entry for the purpose of examining as to nuisance from a drain is given by section 11 of the Nuisances Removal Act of 1855.

(*b*) (1.) (2.) Sections 23 and 25 of the Public Health Act of 1875 have much the same purport as sections 73 and 75 Metropolis Local Management Act, 1855, but contains no provision for right of entry. A general right of entry on lands and premises for examining drains (and other purposes) is given by sections 305 and 306 Public Health Act.

(3.) Section 41 provides that entry may be made to examine drains, on written complaint only. Section 306 gives power of enforcing entry.

(4.) Section 102 gives right of entry to examine in case of nuisance.

Question 2.—State the provisions of the Public Health Act with respect to cellar dwellings.

Answer.—A "cellar dwelling," for the purposes of the Act, is a vault or underground room in which any person passes the night.

It is unlawful to occupy such place as a dwelling, unless the following conditions have been complied with:—

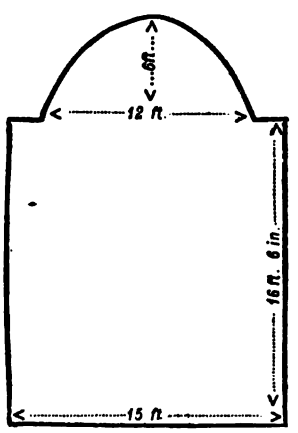
The dwelling must have been lawfully let or occupied as such at the date of the passing of the Act.

It must be at least seven feet high from floor to ceiling everywhere.

There must be an open area along the entire front, with a floor 6 inches below floor of dwelling, a drain whose uppermost part must be at least a foot below the dwelling floor, a window of at least 9 superficial feet area clear of frame for a front apartment, and 4 superficial feet for a back room. The ceiling must be at least 3 feet above level of adjoining ground. The cellar must be ventilated by a chimney or flue, and have a proper privy and ashpit for occupiers use.

Steps are allowed for access from without, and steps over the area for access to the house above; neither must be before the window, and the steps in area must be at least 6 inches clear of outer wall of cellar.

Question 3.—State the cubic contents of a room of the dimensions shown on plan, and 10 feet in height; giving the details of



your calculations. How many adults would you allow to sleep in such a room?

Answer.—

$$\left\{(15 \times 16{\cdot}5) + \left(\frac{12^2 \times {\cdot}7854}{2}\right)\right\} \times 10$$

16·5	·7854	
15	72 $\left(=\frac{12^2}{2}\right)$	
825	15708	56·5
165	54978	247·5
247·5	+ 56·5488	= 304·0

304·0 × 10 = 3040

Allow for each adult 400 cubic feet, assume that bodies, bedding, and furniture (which in practice would be actually measured and deducted from gross cubic contents), will amount to 40 cubic feet per head, in all 440.

$$440\overline{)3040}\,(7$$
$$3080$$

There is about space for seven adults, always provided that ventilation is good and sufficient.

Question 4.—Describe the various means that may be adopted in order to overcome the insanitary conditions arising from the situation of a w.c. in the centre of a dwelling-house.

Answer.—If such a position for a closet is unavoidable, the best form to adopt would be one of the modern patterns that do not require to be boxed in, having no valve apparatus that can get out of order, the trap above floor, and all parts in full sight.

The soil and ventilating pipes should be of drawn lead, in the longest lengths procurable, and with the fewest joints possible, discharging into a cast-iron drain carried on a dwarf wall or other support above basement floor. Every part of these pipes should be either entirely exposed, or so screened as to permit of inspection at any time.

The closet should have a separate inlet for ventilation communicating with outer air, also a separate outlet shaft. A gas jet in or below the latter will be useful to cause a current when the weather is unfavourable.

The door of the closet should be made to fit closely, and all communication with other apartments through joints of flooring or skirting boards cut off.

The work should be of the very best quality throughout, and should be subjected to the severest tests possible to apply before being passed for use.

Question 5.—Describe in detail, and illustrate by a sketch, how a stoneware pipe house-drain should be laid and tested.

What would you consider the least fall that it should have? If so great a fall cannot be obtained, what should be done?

Answer.—The course of the drain must first be lined out on the ground, the length measured, and the difference of level of the upper end and the outfall obtained.

The depth of sewer below surface, and the position of the nearest junction built into it for a house-drain connection will be ascertained from the plan and section in the surveyor's office.

The levels of the ground can be most easily and correctly obtained with a surveyor's level and staff, but if these are not available there are other means, one of which is shown on Sketch A. A boning rod is planted midway between upper end and outfall, the cross piece set horizontal with a mason's spirit level, and sights taken on a rod held over the points to be observed. The sketch shows how the gradient or fall obtainable is ascertained.

Height on rod over outfall	4′ 0″	
Depth below surface to junction	7′ 6′	
		11′ 6″
Height on rod at upper end	7′ 0″	
Depth of head of drain below ground	2′ 0″	
		9′ 0″
Total fall		2 6

Length of drain 100′ = 1 in 40 gradient.

Total fall ... 2′ 6″

Sketches B C D show three ways of getting out the bottom of the trench to a true and uniform gradient. The usual method is shown at B. The cutting being carried down to nearly the depth required—by guess—is brought to the correct depth separately for each pipe as the work proceeds, with a template cut to the required gradient, and a mason's spirit level used as shown.

It is better to complete the grading from end to end before beginning to lay the pipes. This may be done by the use of a boning-rod and sighting-rails, see Sketch C.

The gradient is lined out above ground by means of sighting-rails set up at intervals along the trench, each, say, 10 or 12 feet above bottom of trench. The boning-rod (of the same length) is held up at different points between the sighting-rails, the cutting being continued till the top of crosspiece of the rod and the top of sighting-rails are in a line.

Successive points may be got with three boning-rods used, as shown in Sketch D.

Grips should be cut to receive the pipe sockets (see Sketch B). This prevents the cementing material being squeezed out of bottom of joint and a vacant space left at top, and as the pipes rest on the ground throughout their length, they are less liable to fracture and disturbance than when bearing on the sockets only.

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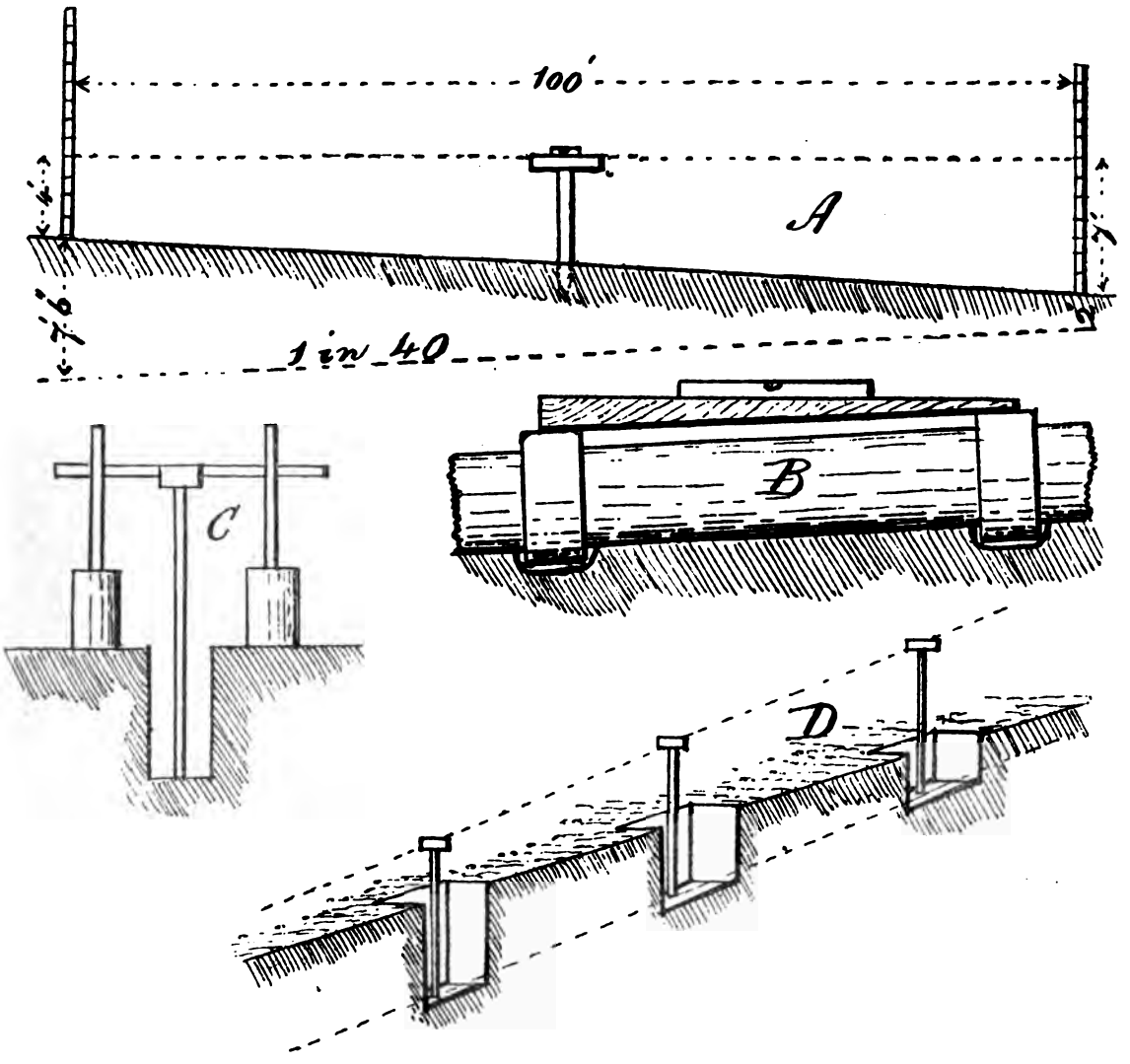

The drain being laid throughout, a bend should be temporarily fixed on the upper pipe, the outfall blocked, and the whole filled with water. If there is an unsound joint, the water will sink in the upright end of the pipes, and the position of the fault will be seen by inspection. The trench will, of course, not be filled in until after testing.

The necessary fall for a house-drain is 1 in 40 for a 4-inch pipe, 1 in 60 for 6-inch, and 1 in 80 for 9-inch.

If a sufficient fall cannot be obtained, an automatic flushing-tank may be fixed at the head of the drain.

This appliance gathers the sewage until the tank is full. A syphon is then automatically set in action, and the sewage passes down the drain in a body with a strong current.

Question **6.**—State the various materials which may be used in the construction of basement floors, and describe their relative advantages from a sanitary point of view.

Answer.—(1.) Ordinary bricks, paving tiles or brick, or stone flags, laid on the ground.

(2.) The same materials, or enamelled tiling, or asphalte, laid upon concrete.

(3.) An ordinary wooden floor.

Class 1 is altogether bad, as permitting the entrance of ground-air, and favouring, more or less, according to the porosity of the material, the drawing up of damp from the soil by capillary attraction.

In Class 2 this is prevented, provided the concrete is sufficient and made of good cement; but the plain bricks and tiles, and the stone flags, absorb more or less of the water used in cleaning. Enamelled tiles and ashphalte are both impervious, and the former make an excellent floor for a dairy, pantry, or store, or in any apartment where coolness is desirable; but they are too chilly for a living room. Asphalte has not this drawback, but is unsuitable for a living room for other reasons.

A wood floor is unsuitable when much washing of the floor is necessary, and is subject to dry-rot unless the space below floor and above the concrete can be well ventilated by air-bricks into an area front and rear.

It is the most comfortable floor for a room in which people live or work.

Question **7.**—What is measles in pork? How do you recognize it? Why should measly pork not be eaten?

Answer.—Pigs are said to have the measles, or as it is sometimes called, "the purples," when they are suffering from the presence of a parasite, which, breeding in the bowels, ultimately works its way into the muscles, and there becomes "encysted" and lies dormant.

In the living animal and in the carcase it is recognized by the appearance of purple spots, generally appearing behind the ears and along the belly, when the disease has reached the advanced stage, or "worked through."

These spots will be found in the inside of the carcase if the animal be killed in the earlier stage of the disease.

This parasite, which, during the stage of its existence above described, is called a "scolex," may be recognized under a magnifying glass by a circle of hooklets round it.

Pork so infected should not be eaten, because the "scolex," if not killed by thorough cooking, or by salting and smoking, develops, when taken into the human body, into a tænia or tapeworm, just as the chrysalis develops into a moth or butterfly.

Question **8.**—In visiting a house after a case of typhoid fever,

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what inquiries would you make; and, in inspecting it, to what points would you specially direct your attention?

Answer.—My inquiries would be directed to ascertaining the cause of illness. Some time within, perhaps, three weeks of its commencement, there would have been exposure to infection from the emanations from a sewer, drain, water-closet, or cesspool, or from drinking polluted water or milk. It would be ascertained whether the patient had been wholly at home, or in the habit of going to work or business, or had been away for a holiday, or outing, or on a visit, or had been attending school. Where the milk came from; whether it was always boiled, or not, before use.

The water would be examined, and, if from a well, analyzed; if from the mains, inquiry would be made as to the possibility of contagion from its having been stored in a tank or cistern: either from undue proximity to a water-closet, or from an overflow pipe passing direct into a drain, or any other cause. The drains and sanitary fittings would be thoroughly examined, and careful inquiry made as to the existence of any cesspool on or about the premises.

If nothing wrong were found in the house, it would be desirable to thoroughly examine every other place visited by the patient, in which infection might have been communicated.

I should satisfy myself that the stools of the patient had been thoroughly disinfected and safely disposed of, and that any foul linen had been disinfected or destroyed.

Question **2.**—What are the requirements of a properly constructed slaughter-house?

Answer.—The slaughter-house should be as far as possible from any shop, dwelling, or public road. The approaches should be wide, have easy gradients, and should not pass through shop or dwelling.

The building should have good means of lighting, both natural and artificial, and abundant ventilation. There should be no room or loft above it. The floor should be of some impervious material, easily cleaned, but not so smooth as to be slippery; near the entrance, especially, it should be of a nature to afford good foothold. It should slope towards a drain gully provided with extra close bars (three-eighths inch spaces).

There should be a good pressure of water for cleansing purposes, either from the main, or from a tank at least six feet above floor.

The walls should be covered with some smooth impervious material, to a height of 4 or 6 feet. Firmly fixed rings or other fittings must be provided for securing the head of the beast for felling. Galvanized iron receptacles for offal must be provided; the lids to fit closely.

There must be no privy, closet, urinal, or cesspool, and no stable in direct communication with the slaughter-house.

The lairs must be well lighted, paved, and drained, and should have convenient means of watering and feeding the animals awaiting slaughter. There should be no habitable room above them.

SANITARY ASSOCIATION OF SCOTLAND.

THE Board of Examiners in sanitary science of this Association met in Glasgow on April 24, to grant certificates of competency to candidates who were successful in the examination held in the Royal College of Surgeons, Edinburgh. Twenty-six candidates presented themselves for examination, seventeen of whom gained a sufficient number of marks to entitle them to a certificate, viz.:—

William Walker, sanitary inspector, Glasgow; Miles M'Innes, Dumfries; William Fraser, sanitary inspector, Glasgow; William Miller, sanitary inspector, Glasgow; Robert Young, plumber, Duns; James Murray, builder, Dunoon; James Ferguson, teacher, Balbeggie; Wm. Reid, sanitary inspector, Aberdeen; John Graham, sanitary inspector, Aberdeen; John Sim, inspector of works, Glasgow; James Salmon, sanitary inspector, Glasgow; Henry Watt, sanitary inspector, Glasgow; William Thaw, sanitary inspector, Glasgow; Robert Knight, junior, veterinary surgeon, Dunfermline; Charles O. Drysdale, engineer's clerk, Cathcart; William Campbell, surveyor and sanitary inspector, Oban; Neil Gillies, architect, Lochgilphead.

EXAMINATION FOR SANITARY INSPECTORS.

EDINBURGH, APRIL 28, 1890.

EXAMINERS:—H. D. LITTLEJOHN, M.D., Medical Officer of Health; T. G. NASMYTH, M.D., D.Sc.; GEO. MACKAY, Esq., Sanitary Inspector, Govan; KENNETH CAMERON, Esq., Sanitary Inspector, Aberdeen.

Question **1.**—State what are the principal component parts of the atmosphere and their relative amounts in percentages, and state an easy and handy method whereby you could ascertain the presence of carbonic acid gas in the air of a sleeping apartment.

Answer.—Air is a mixture of various gases, the principal being nitrogen and oxygen. Of 100 parts of dry or what may be called pure air the ratios are, nitrogen 79 parts, and oxygen 21. The other compound bodies present in smaller quantities are carbonic acid, ammonia, nitric acid, and aqueous vapour. These latter, however, are inconstant in quantity, and in fact the ammonia and nitric acid are in such minute quantities as to be imperceptible, and frequently absent altogether. The aqueous vapour averages in this climate about 1¼ per cent., and the carbonic acid 33 parts in 100,000.

The presence of carbonic acid in the air of a sleeping apartment may be ascertained in a rough manner by mixing some common lime with water, in an open vessel, and allowing it to settle down. If carbonic acid be present the water becomes turbid, a precipitate of carbonate of lime being formed. If hydrochloric acid is poured on this precipitate the carbonic acid is evolved in an effervescent form.

Question **2.**—If there is reason to suspect that sewer gas is escaping in a house, in what way would you proceed to examine the drains and pipes, and what points would you look to? Write a report upon a supposed case, stating how the drains, soil-pipes, and waste-pipes should be arranged, so as to prevent any danger to the inmates.

Answer.—I would proceed to examine the drain outside and ascertain if it were trapped, if there were any subsidence indicating built drains, or broken pipes, or if there were any rat holes. Inside the house I would open up the lining of water closets, sinks, and lavatories, and make a careful examination of the soil and waste-pipes, and their connections, observing whether they were properly trapped and ventilated. Failing to detect the source of the sewer gas, the only other effectual method of inspection would be the application of the smoke test to the whole system, which should reveal the precise point of leakage.

Report on supposed case: I have made an inspection of your villa and find that the house-drain is carried from the kitchen right through below the floor of one of the bed-rooms adjoining. It has been constructed of bricks; is badly formed, and has an insufficient fall. It will be necessary to remove it and the saturated soil, and lay a new pipe-drain from a suitable point at outside wall to the main sewer. The drain-pipes should be laid in a bed of concrete and properly cemented. They may be made of either fireclay, glazed inside, or iron, with an internal lining of white enamel. The drain being untrapped and unventilated, it will be necessary to put in an improved ventilating trap with vertical shaft, and surface grating on top, outside of wall. Extend soil-pipe to 18 inches above ridge of roof, making all the joints and connections thoroughly tight. The internal conveniences should be placed in such a position that the several pipes therefrom and the drains are chiefly outside the building, and rain and similar connections disconnected from the soil-pipe. (See "The Sanitary Requirements of the Modern Dwelling-House," by Francis Vacher, in SANITARY RECORD for December 16, 1889, page 264, for fuller information under this heading.)

Question **3.**—An over-crowded house is found to have several lodgers, what steps can be taken by the local authority to remove the nuisance? Detail the legal provisions referring to such a case.

Answer.—The 16th sect. of the Public Health (Scotland) Act, clause (*f*) enacts that "any house or part of a house so overcrowded as to be dangerous or injurious to the health of the inmates" may be defined as a nuisance, and the occupier proceeded against in terms thereof. The local authority is also empowered to make bye-laws for houses let in lodgings, by the 44th sect., contravention of which may be tried before a magistrate. The 59th sect. makes similar provision for common lodging-houses.

Question **4.**—A trade which is proposed to be established in a town is objected to by the inhabitants. What remedies are at the disposal of the local authority, and of the public, to prevent its establishment, and what are the circumstances that would justify their opposition?

Answer.—16th sect. of Public Health Act provides that the business of a blood boiler, bone boiler, tanner, slaughterer of cattle, horses, or animals of any description, soap boiler, skinner, tallow melter, tripe boiler, or other business, trade, or manufacture injurious shall not be newly established or enlarged after the passing of this Act, in any building or place within any burgh or village, or within 500 yards therefrom, without the consent in writing of the local authority previously had and obtained, and published in one or more newspapers circulating within the district. Any question arising as to the existence or limits of a burgh or village, or to the extent included within the 500 yards, or as to whether a business, trade, or manufacture, other than those above specified, is injurious to health, &c., shall be determined by the board of supervision. The 16th sect., clause (*e*) states that any work, manufactory, trade, or business injurious to the health of the neighbourhood, or so conducted as to be offensive or injurious to health, shall be included under the word "nuisance."

Question **5.**—What are the points to be attended to by a sanitary inspector in visiting and reporting upon dairies and slaughter-houses?

Answer.—As to dairies, see that the lighting, ventilation, cleansing, drainage, and water supply, are good; that the milk-stores and milk-shops are kept thoroughly clean; that the milk vessels for conveying or storing milk are kept clean; that no boiler for washing the milk vessels is used for washing household clothing, and that the sleeping apartments, if any, shall not be in direct communication with the milk store by door, window, or otherwise. Water-closets, privies, &c., should not be in direct communication with milk-stores or milk-shops, and persons suffering

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from infectious disease should not be allowed to milk cows or handle milk vessels.

As to slaughter-houses, they should be sufficiently provided with light, ventilation, drainage, and water supply. Floors should be formed of granolithic or asphalt. Stalls and other internal fittings, as far as possible, should be formed of glazed, varnished, non-porous, non-absorbent material, and should be kept thoroughly clean. Public slaughter-houses are, as a rule, preferable to private ones, but both should as far as possible be removed from the vicinity of dwelling-houses.

Question 6.—A circular well, 3 feet diameter, contains water to a depth of 6 feet. How many gallons does the well contain? How may the risks of pollution be prevented in shallow wells?

Answer.—The rule for ascertaining the contents is as follows:—The well is in the shape of a cylinder, therefore, first find the area of the base which is a circle. To arrive at this either of the following rules are applicable: Multiply the diameter by the circumference, and take one-fourth of product; or, multiply the square of the diameter by 0·7854, or, for greater accuracy, by 0·785398; or, multiply the square of the radius by 3·141593; or multiply the square of the circumference by 0·07958. Then multiply the product by the depth, reduce to cubic inches, and divide by 277·274 the amount of cubic inches in a gallon. The well holds 265 gallons.

Shallow wells should be removed from the neighbourhood of ashpits, privies, or drains, and their sides made thoroughly tight with cement to prevent contamination from the surface.

Question 7.—What diameter do you consider sufficient for a horizontal drain and a vertical soil-pipe in a tenement of three flats having twelve houses? State what kind of material should be used in such drain and soil-pipe.

Answer.—The drain should be of 6-inch pipes, and the soil-pipe and branches of 4-inch pipes. The former should be made of fireclay glazed pipes, straight, smooth, and without holes or cracks. The soil-pipe should be of iron. (See answer to Question 2.)

Question 8.—Mention three diseased conditions of animals which produce corresponding diseases of man? What precautions might prevent these occurring?

Answer.—Tuberculosis, trichinosis, typhoid fever.

The thorough inspection by medical or veterinary experts and power to condemn and destroy either live or dead animals would prevent the disease being communicated by eating the flesh. To guard against the disease taking place in animals, well lighted, ventilated and drained cattle-sheds or byres should be the rule. Inspectors should see that animals are not crowded into too little space, that they are kept clean and supplied with good water.

SANITO-PARLIAMENTARY.

HOUSE OF COMMONS.—April 18.

Brompton Cemetery.

Mr. Jackson, in reply to Dr. Farquharson, said there was no intention to close the Brompton Cemetery. He did not admit that it was in an unsanitary condition, and it yielded a considerable revenue.

April 22.

Steam Laundries.

In answer to Mr. Coghill,

Mr. Matthews said:—The question of including laundries in the Factory Act of 1878 was carefully considered at the time of the passing of that Act. The trade strongly resisted the proposal on the ground that so much of the work was required to be done without delay, that any limitation of the hours of work would be impracticable. A concession was accordingly made to the necessities of the trade, and laundries were not included in the Act, regard being had to the fact that children and young persons are not employed in laundries.

Tuberculosis in Cattle.

Mr. Lee Knowles presented a petition from the master butchers of Lancashire, Yorkshire, and Durham, urging that until inquiry had been made into the question whether tuberculosis in cattle rendered meat unfit for human food no trader should be prosecuted for having on his premises a beast suffering from the disease, and that where confiscation is ordered in such cases compensation should be allowed.

April 29.

"Filled" Cheese.

In answer to Mr. M. J. Stewart,

Sir M. Hicks-Beach said:—There is no official information respecting the amount of "filled" cheese manufactured in the United Kingdom. As regards importation, I am informed by the Customs that of imitation cheese, which would include "filled" cheese, 1,852 cwts., valued at £3,669, were imported in 1889, and 345 cwts., valued at £648, in the present year up to April 23. Previous to 1889 there were no entries of such cheese. As at present advised, I do not think it would be desirable to amend the Margarine Act.

Sale of Food and Drugs Acts.

Mr. O. V. Morgan asked the Secretary of State for the Home Department whether the metropolitan magistrates had yet conferred together with the object of arriving at some common understanding as to the administration of the Sale of Food and Drugs Acts.

Mr. Matthews.—Yes, Sir, the chief magistrate informs me that he has conferred with his brother magistrates on this subject. They were unanimous as to the importance of the Acts, and as to the principle which should guide them in fixing the amount of fines; and they attributed the difference in the amount of fines inflicted solely to the variety of the circumstances in each case, the variation ranging from gross fraud to simple accident, and from large to very small adulteration.

School Board Buildings.

Dr. Farquharson asked the First Lord of the Treasury whether, considering the serious accusations of sanitary and other structural defects recently made against buildings erected by the London School Board, the Government would give facilities for the consideration of the Sanitary Registration of Buildings Bill now before the House, or would themselves introduce a Bill to prevent the use of schools and other new public buildings until their fitness for sanitary occupation had been certified by some competent authority.

Mr. W. H. Smith.—The Government cannot undertake to give any exceptional facilities for the consideration of the Sanitary Registration of Buildings Bill, nor can they at present give any undertaking to introduce a Bill to prevent the use of schools and public buildings until their sanitary fitness for occupation has been certified. The granting of certificates as to the sanitary fitness of premises is not unattended with risk, unless the duty of examination is exercised with great care and under circumstances which admit of a proper examination being made. Any certificate as to sanitary condition would be regarded as relieving from responsibility as regards sanitary arrangements those on whom the responsibility should rest.

April 30.

Tuberculosis in Cattle.

Mr. G. Balfour asked the President of the Board of Agriculture whether he proposed to take any action in view of the facts laid before him by a deputation on April 24, relative to the disease of tuberculosis in cattle.

Mr. Chaplin.—Yes, Sir; I stated to the deputation that the first thing, in my judgment, to be done was to obtain an authoritative opinion as to how far and at what stages of the disease meat derived from animals suffering from tuberculosis was unfit for and dangerous as human food, and that I would consult with my right hon. friend and my colleagues without delay as to the most satisfactory means of obtaining such an opinion. I have taken an early opportunity of doing so, with this result—that as this is a question primarily affecting the public health, my right hon. friend the President of the Local Government Board proposes to institute a scientific inquiry into the question without delay.

May 2.

New Bill.

On the motion of the Earl of Meath, a Bill to provide for the better protection of children was introduced and read a first time.

May 6.

The Medical Officer for St. Giles's.

Mr. Ritchie, in answer to Mr. Cuninghame Graham, said that the Medical Officer of Health for the St. Giles-in-the-Fields District Board of Works prior to his re-appointment was not required to devote his whole time to his duties. This condition was imposed upon him when he was re-appointed, and it was in consideration of this that the vestry assigned to him the higher salary of £600 a year. The matter appeared to have been fully considered by the vestry on more than one occasion, and the Local Government Board did not think that the circumstances were such that they should withhold their assent to the proposal. At the suggestion of the Board, however, it was made a condition that the medical officer should agree that in the event of his losing his office by reason of the appointment of a medical officer of health for an extended area, including the whole or part of the district assigned to him, he would make no claim to compensation for any loss of emoluments exceeding the salary of £300 per annum which he had previously received.

Metropolitan Health Bills.

In answer to Mr. J. Rowlands,

Mr. W. H. Smith said:—The Government hope to be able to introduce the Bills dealing with the consolidation and amendment of the laws with respect to public health in the metropolis and to the dwellings of the working-classes shortly before Whitsuntide.

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Unvaccinated Pupil Teachers at Leicester.

Mr. Picton asked the Vice-President of the Committee of Council on Education whether he would reconsider the practical difficulty in which the School Board for Leicester was placed by the impossibility of securing a sufficient number of candidates for the position of pupil teacher who could produce a certificate of vaccination; and whether the Department was compelled by law to make such a certificate a condition of its approval of candidates; if so, by what law; and if not, whether he would consider the hardship inflicted thus on candidates over 14 years of age who were outside the scope of the vaccination laws.

Sir W. Hart Dyke.—I am not aware that there is any difficulty in procuring a certificate of vaccination at Leicester, if the proper medical authority is applied to, and the hon. member must see that it would be highly inexpedient for the Department to relax a rule of great importance to the health of the children in elementary schools, because of the unfortunate attitude towards compulsory vaccination taken up by the inhabitants of Leicester.

Lead Poisoning at Sheffield.

In answer to Dr. Farquharson,

Mr. Ritchie said:—I have received a communication from the Town Clerk of Sheffield, from which it appears that a committee which included Professor Dewar, Dr. Bristowe, and Mr. Hawksley, was appointed by the Town Council to consider the extensive prevalence of lead poisoning in Sheffield and the surrounding districts due to the drinking water, and that the remedy recommended by that committee has been adopted by the Town Council. The results as regards the improvement of the water supply are stated to have been decidedly beneficial, and the Town Council hope that a complete remedy will be provided.

BILLS BEFORE PARLIAMENT.

Poisoned Flesh.

In 1864 an Act of Parliament was passed to prohibit the placing of poisoned flesh and poisonous matters in plantations, fields, and open places. Under this enactment, if a person knowingly places or causes to be placed on any land flesh or meat which has been mixed with, or steeped in, or impregnated with poison or some poisonous ingredient, so as to render it calculated to destroy life, he is upon summary conviction to forfeit a sum not exceeding £10. This, however, is not intended to prevent the occupier of a building or the owner of a rick from placing in it, or in the garden or in the drains, some poisonous preparation for the destruction of vermin. In a Bill now introduced by Mr. Francis Stevenson, M.P., it is proposed to make the statute applicable not only to flesh or meat, but to all animal substances which have been made poisonous.

REVIEW.

Journal of the Royal Agricultural Society of England. Third series. Vol. i., part I., 1890, pp. 320. John Murray.

Some quarter of a century ago the world was all agog over the sewage question, and sanitarians and agriculturalists were alike hoping for a solution of their difficulties through the regeneration of the soil by the application to it of the waste products of urban life. Sewage farming was to be the great panacea of all towns in trouble with their drainage or river pollution, and those enterprising persons who embarked in the business were to make their fortunes. These and similar phases of the great sanitary question have come and gone without leaving much change behind. Though there is a tinge of the pessimism which has come over Mr. Clare Sewell Read in his later days in the opening paragraph of the article, which we reprint on page 528, there can be no doubt that the present attitude of those who are responsible for the conservancy of towns is an anxiety "to rid themselves of the sewage that it may do the smallest amount of harm at the least possible cost." It is not our present intention to attempt to rekindle under guise of a review the embers of a once blazing controversy; and we must leave Mr. Read's paper with the trite remark that the last word has not been said on the subject. Whether there be anything or not in the fanciful legend of the world losing fertility with which Mr. Kains-Jackson attempted to disturb our equanimity, there can be no manner of doubt that we do now absolutely waste countless tons of matter of manurial value, whilst at the same time paying large sums for imported fertilizers; and the sources of future manures is a question that must some time or other be faced.

The journal that contains the results of Mr. Read's inquiries made for the Royal Agricultural Society is the first of a new series, and gives excellent promise for the future. The motto of the Society is "Practice with Science," and an evident attempt has been made to give a judicious blend of both, with a spice of anecdote for flavouring. There is much of interest to the sanitarian in Sir John Lawes' able paper on "The Food of our Agricultural Crops"; in Professor Brown's note on "Influenza in Horses," which, he says, resembles in many of its features the recent epidemic in man, though "there is nothing to justify even a remote suspicion that the two were communicable from the one subject to the other"; and in Dr. Fream's clear and intelligible summary of Weismann's view and startling theories on "Heredity." Mr. Henry Evershed's paper on the "Early Fattening of Cattle and Sheep" raises questions which the author would not suspect of the physiological results of eating "baby beef." It would be well worth study to compare the respective values, for food, strength-giving, and muscle-forming purposes, of equal quantities of beef or mutton reared on natural principles, and by the process of fattening and stuffing from the moment of the animal's birth, as described on page 56.

The late Dr. Edward Smith made some (though not comparative) inquiries of this sort a good many years ago, and his investigations would be well worth bringing up to date. It is to be feared, however, that with the clamour for cheap food and the natural desire of graziers to "finish off" their beasts as soon as possible, no results that could be published would stop the present passion for "early maturity."

LOCAL INTELLIGENCE.

Medical Officer for Stirlingshire.—The Committee of the Provisional Council for Stirlingshire who have had under their consideration the appointment of a medical officer for Stirlingshire, suggest that a union of the counties of Stirling, Dumbarton, and Clackmannan would be a suitable area of duty for a medical officer acting under such arrangements as are above indicated, and they recommend the Provisional Council to invite a conference with the Councils of those counties. The recommendation of the Committee on being put to the vote was carried by a large majority.

Typhoid Fever at Barrow.—There have recently occurred several cases of typhoid fever in the parish of Barrow, the ages of those attacked varying from four to forty years. It was stated by the medical attendant that two children came to Barrow on a visit from a village in a neighbouring union where fever existed, and it was thought that five of the cases were directly traceable to that cause. One mother who had nursed her two infected children night and day also took the fever. The disease was said to have been introduced from the Bosworth union.

Presentation.—Dr. Arthur Wellesley Harris the newly appointed Medical Officer of Health to the Southampton Corporation, has been presented by the staff of the Highgate Infirmary, Holborn Union, with a scalloped shell electro-silver biscuit-case, and a Tantalus liqueur electro-plated stand, as a souvenir of the affection and esteem in which he is held.

The outbreak of measles in Dundee is said to have increased to an alarming extent, 223 cases having been reported throughout the past month, the total number of deaths being 24.

APPOINTMENTS.

Medical Officers of Health.

Babst, C. T., L.R.C.P., L.R.C.S.Edin., has been re-appointed Medical Officer of Health to the Willington Quay Local Board.

Bailey, Thomas Ridley, M.D.Edin., C.M., has been re-appointed Medical Officer of Health to the Bilston Urban Sanitary Authority.

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BERRY, Edmund, L.K.Q.C.P.I., L.M., L.F.P.S.Glas., has been re-appointed Medical Officer of Health to the Leyland Urban Sanitary Authority.

BROOKE, W., M.D., has been re-appointed Medical Officer of Health to the Crompton Urban Sanitary Authority.

BURTON, E. G., M.D., L.R.C.S., has been re-appointed Medical Officer to the Brentford Rural Sanitary Authority.

CAMPBELL, Dr., has been re-appointed Medical Officer of Health for the Port of Gloucester.

CHAMBERS, Antony Bernard, M.D.Roy.Univ.Irel., M.Ch., L.M., has been re-appointed Medical Officer of Health to the Long Eaton Urban Sanitary Authority.

CLOTHIER, H., M.D., L.R.C.P.Lond., has been re-appointed Medical Officer of Health to the Hornsey Urban Sanitary Authority.

COOKE, Dr. C. A., has been appointed Medical Officer of Health to the Wem Rural Sanitary Authority, *vice* B. F. Giles, resigned.

CRESSWELL, R., M.R.C.S.Eng., Lond.L.S.A., has been appointed Medical Officer of Health to the Cheltenham Rural Sanitary District, *vice* H. Jessop, deceased.

DAVIES, David Samuel, M.B.Lond., L.R.C.P.Lond., M.R.C.S.Eng., L.S.A., has been re-appointed Medical Officer of Health to the Bristol Port Sanitary Authority.

DRAGE, Lovell, M.A., M.B., M.R.C.S., has been re-appointed Medical Officer of Health to the Hatfield Rural Sanitary Authority.

DRYLAND, John Winter, M.R.C.S.Eng., L.S.A., has been re-appointed Medical Officer of Health to the Kettering Local Board.

EATON, James William, L.R.C.P., M.R.C.S., has been re-appointed Medical Officer of Health to the Bingham Rural Sanitary Authority.

FISHER, J. A., L.R.C.P.Edin., L.M., L.F.P.S.Glas., has been re-appointed Medical Officer of Health to the Garston Local Board.

FISHER, J. B., M.B.Edin. and C.M., has been re-appointed Medical Officer of Health to the Whitehaven Union Rural Sanitary Authority.

FISHER, T., M.R.C.S.Eng., L.S.A., has been re-appointed Medical Officer of Health to the Garstang Rural Sanitary Authority.

FOSBROKE, George Haynes, M.R.C.S.Eng., L.S.A.Lond., D.P.H. Camb., has been appointed Medical Officer of Health to the County Council of Worcestershire, at £600 per annum and travelling expenses.

GANGE, F. A., M.D.St. And., M.R.C.S., L.S.A., has been re-appointed Medical Officer of Health to the Faversham Rural Sanitary Authority.

GIBBS, Dr. C. C., has been appointed Medical Officer of Health to the Kingston Rural Sanitary Authority, *vice* W. P. Jones, deceased.

GILES, Oswald, L.R.C.P.Lond., M.R.C.S.Eng., has been re-appointed Medical Officer of Health to the Ruskington Urban Sanitary Authority.

GOWAN, Bowie Campbell, L.R.C.P.Lond., L.S.A., has been appointed Sanitary Medical Officer to the Hendon Rural Sanitary Authority, *vice* Dr. W. Thompson, at £100 per annum.

HARRIS, A. Wellesley, M.R.C.S., L.S.A., D.P.H., has been appointed Medical Officer of Health to the Borough of Southampton.

HAYWARD, Thomas Ernest, M.B.Lond., F.R.C.S.Eng., L.S.A., has been re-appointed Medical Officer of Health to the Haydock Urban Sanitary Authority.

HEAVEN, John Cookesley, L.R.C.P.Lond., M.R.C.S.Eng., has been re-appointed Assistant Medical Officer of Health to the Bristol Port Sanitary Authority.

HEPBURN, W. Alexander, F.F.P.S.Glasg., L.S.A., has been appointed Medical Officer of Health to the Rural Sanitary District of the Durham Union.

HOBBES, J. L., L.R.C.P., M.R.C.S., has been re-appointed to the Bromsgrove Rural Sanitary Authority.

HYATT, James Taylor, L.R.C.P.Edin., M.R.C.S.Eng., has been re-appointed Medical Officer of Health to the Skipton Mallet Rural Sanitary Authority.

JOHNSTONE, Geo. Warrack, L.R.C.P.Edin., L.M., L.F.P.S.Glas., has been re-appointed Medical Officer of Health to the Orrell Urban Sanitary District for one year.

JOY, Fredk. Wm., L.R.C.P.Edin., L.M., M.R.C.S.Eng., has been re-appointed Medical Officer of Health to the Thetford Rural Sanitary District.

KERSWILL, John Bedford, M.R.C.P.Edin., M.R.C.S.Eng., F.L.S., re-appointed Medical Officer of Health to the St. Germans Rural Sanitary Authority for three years.

LIMERICK, Wm. S., L.R.C.P., L.R.C.S.Edin., has been re-appointed Medical Officer of Great Crosby Urban Sanitary Districts.

MACGREGOR, D. A., M.B.Edin., and C.M., has been re-appointed Medical Officer of Health to the High Hoyland Division of the Penistone Union Rural Sanitary Authority.

MACLEAN, Chas. J. Russell, M.D., M.S.Edin., has been re-appointed Medical Officer of Health for the Yeadon Urban Sanitary District.

MCPHERSON, Alexander, M.D.Aberd., C.M., has been re-appointed Medical Officer of Health to the Haslingden Urban Sanitary Authority.

MARTIN, A. W., L.R.C.P., L.R.C.S.Edin., has been re-appointed Medical Officer of Health to the Gorton Urban Sanitary District.

MASON, William, L.R.C.P., L.R.C.S.Edin., has been re-appointed Medical Officer of Health to the St. Austell Urban Sanitary District.

MORCOM, A., L.R.C.S.Edin., L.M., L.S.A., has been re-appointed Medical Officer of Health to the Luton Rural Sanitary Authority.

MUIL, W., M.D.Aberd., and C.M., has been re-appointed Medical Officer of Health to Kirkby Moorside Rural Sanitary Authority.

NEWMAN, Henry, M.R.C.S., L.S.A., has been appointed Medical Officer of Health to the Hadley Urban Sanitary District, Cosford Union, *vice* A. T. B. Atkins, M.R.C.S.Eng., deceased.

PRIDEAUX, T. E. P., L.R.C.P.Lond., M.R.C.S.Eng., has been re-appointed Medical Officer of Health to the Wellington Rural Sanitary Authority.

REID, James R., M.B., C.M.Aberd., has been appointed Medical Officer of Health to the Helmsley Rural Sanitary Authority, *vice* F. W. Dowker, resigned.

REYNOLDS, H. S., L.R.C.P.Edin., and L.M., has been appointed Medical Officer for the Wimpole District of the Caxton and Arrington Union, *vice* L. M. Earle.

ROBERTS, E. C., M.R.C.S.Eng., L.S.A., has been re-appointed Medical Officer of Health for Southgate.

SHADWELL, St. Clair B., L.R.C.P.Lond., M.R.C.S.Eng., has been re-appointed Medical Officer of Health to the Walthamstow Urban Sanitary Authority.

SKINNER, Ernest W., M B., C.M.Edin., has been appointed Medical Officer of Health to the Rye Rural Sanitary Authority.

STEVENSON, Robert, L.R.C.P., L.R.C.S.Edin., has been re-appointed Medical Officer of Health for Rothwell.

SUTTON, H. G., M.D.St. And., M.R.C.S.Eng., L.S.A., has been re-appointed Medical Officer of Health for Sittingbourne.

VINCENT, Henry Bird, M.R.C.S.Eng., L.S.A., has been re-appointed Medical Officer of Health to the East Dereham Urban Sanitary Authority.

WATSON, Thomas, M.D.Glas., and C.M., has been re-appointed Medical Officer of Health to the South Stockton Urban Sanitary District.

WILLIAMS, Dr., has been appointed Medical Officer of Health to the Sherborne Local Board.

WILLS, Charles, M.R.C.S., L.S.A., has been re-appointed Medical Officer of Health to the Mansfield Urban Sanitary Authority in conjunction with the Worksop and Southwell Rural Districts for one year.

WILSON, A. C. J., L.R.C.P.Edin., L.M., M.R.C.S.Eng., has been re-appointed Medical Officer of Health to the Penistone Union Rural Sanitary District.

POOR-LAW MEDICAL OFFICERS.

AMBROSE, Alexander, B.A., LL.B., T.C., M.D.Dub., has been appointed Medical Officer for the Buckhurst Hill District of the Epping Union.

BANNATYNE, Gilbert A., M.B.Glasg., C.M., L.R.C.S.Edin., has been appointed by the Greenock Parochial Board Assistant Medical Officer at Smithston.

BARR, C., has been appointed Medical Officer and Vaccination Officer for the Wentworth District of the Rotherham Union, *vice* W. Clarke, M.D.

BARRETT, R. H., L.R.C.P., M.R.C.S., has been appointed Medical Officer for the 2nd and 3rd B. Districts of the Wisbech Union, *vice* E. Welchmann, L.R.C.P., M.R.C.S., resigned.

BINGHAM, John J., M.D.St. And., L.R.C.P.Edin., L.M., M.R.C.S.Eng., has been appointed Medical Officer to the Alfreton District of the Belper Union, *vice* Dr. T. L. Roberts, deceased.

BULLOCK, Roger, M.R.C.S.Eng., L.S.A., has been appointed Medical Officer to the Warwick Union Workhouse, *vice* J. S. Baly, M.R.C.S., L.S.A., deceased.

CARMICHAEL, D., M.B., has been appointed Medical Officer to Durness, Sutherlandshire, *vice* Dr. A. F. McKenzie, at £150 per annum.

COPNER, Arthur Lewis, L.R.C.P.Edin., M.R.C.S.Eng., has been appointed Medical Officer of Health for the Ilfracombe, Morthoe, and West Down District of the Barnstaple Union, *vice* F. Gardner, M.R.C.S., L.S.A., resigned.

CREASY, R., L.R.C.P., M.R.C.S., has been re-appointed Medical Officer and Public Vaccinator to the 2nd District of the Winslow Union.

CULLEN, Daniel Joseph, L.K.Q.C.P.I., L.R.C.S.I., has been appointed Medical Officer for the Workhouse of the Carrickmacross Union, *vice* Dr. William McThenna, deceased, at £40 a year.

DALTON, Dr. E. G., has been appointed Medical Officer for the Western District of the Cerne Union, *vice* W. McEnery, resigned.

DRURY, Arthur, M.B., C.M., has been appointed Medical Officer and Public Vaccinator for the township of Halifax.

EVANS, William Henry, L.R.C.P.Edin., L.M., M.R.C.S.Eng., has been appointed Medical Officer for Colyton and Shute, Axminster Union, *vice* Dr. Frank Pearse, resigned.

GALLOWAY, Walter, L.R.C.P., L.M., L.R.C.S.Edin., has been re-appointed Medical Officer for the Birtley District of the Chester-le-Street Union.

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GEDDIE, W., M.D.Aberd., has been appointed Medical Officer for the 2nd Accrington District of the Haslingden Union.

GILES, Arthur E., B.Sc., M.B., has been appointed Assistant Medical Officer of the Workhouse, Manchester, *vice* J. Duncan, resigned.

GOODWIN, Dr., has been appointed Medical Officer to the Islington District of the Newton Union.

GRANGER, Robert Fawcett, L.R.C.P., L.R.C.S.Edin., has been appointed Medical Officer for the West Whitby District and Workhouse of the Whitby Union, *vice* J. R. Semple, M.B. Glasg., at £80 per annum.

GREENWOOD, Major, jun., M.D.Brux., L.R.C.P., D.P.H., has been appointed Medical Officer for the Haggerston West District, St. Leonard, Shoreditch.

GRIMBLY, Richard Henry, M.R.C.S., L.S.A., has been appointed Medical Officer for the Ippleben District of the Newton Union.

HANDS, Arthur, L.R.C.P., M.R.C.S., has been appointed Vaccination Officer for the Wednesfield District of the Wolverhampton Union.

HARRIS, John H., M.R.C.S., L.S.A., has been appointed Medical Officer for the 9th District of the Totnes Union, *vice* R. Gillard.

HODGSON, Dr., has been appointed Medical Officer for the Cropedy District of the Banbury Union.

JOHNSTON, Alex., M.B.Glasg., and C.M., has been appointed Parochial Medical Officer and Vaccinator for the Parish of Methven, *vice* Dr. Valentine, resigned.

JONES, Parry, M.D., has been appointed Medical Officer for the No. 5 District of the Mansfield Union.

KELYNACK, T. N., has been appointed Assistant Medical Officer of the Crumpsall Workhouse, and the Receiving Wards of the Township of Manchester, *vice* A. E. Giles, resigned.

LONG, Richard W., L.R.C.P., L.R.C.S.Edin., has been appointed Medical Officer for the Shap District and the Workhouse of the West Ward Union, *vice* W. Stephen A.M., M.D.

MANNING, Dr. Francis B., has been appointed Medical Officer for the 9th District of the Barnstaple Union.

MARTIN, A. A., L.R.C.P., L.R.C.S.Edin., has been appointed Medical Officer for the North Shields District of the Tynemouth Union, *vice* W. M. Mackay.

MCARDLE, Francis James, L.K.Q.C.P.I., has been appointed Medical Officer to the St. Nicholas District of the Durham Union, *vice* William Boyd, M.R.C.S., L.S.A., retired.

MUNN, Dr., has been appointed Medical Officer to the Workhouse of the Belfast Union.

NEWBOULD, Dr., has been appointed Medical Officer for Abbots Bromley District of Uttoxeter Union, *vice* R. Earlam.

NORMAN, Dr., has been appointed Medical Officer to the Wendron District of the Helston Union, *vice* Mr. Robinson.

NORTON, Everett E., M.R.C.S.Eng., L.R.C.P.Lond., has been appointed Medical Officer to the Holborn Union Infirmary, Archway Road, *vice* Arthur Wellesley Harris, resigned, at £100 per annum.

OSBALDESTON, L. Fredk., M.R.C.S.Eng., L.S.A., has been reappointed Medical Officer to the 3rd District of the Hatfield Union.

PATCHETT, R. A., L.R.C.S.Edin., has been re-appointed Medical Officer to the Chipping District of the Clitheroe Union.

PRESTON, H. T., M.B., C.M., M.R.C.S.Eng., has been re-appointed Medical Officer for the Wolverley District of the Kidderminster Union.

RAYMENT, Edward Wm., M.B.Edin., C.M., has been appointed Medical Officer for the 2nd District of the Pewsey Union, *vice* T. Clarke, resigned.

RICHMOND, Mr., M.D., has been appointed Medical Officer and Public Vaccinator for the Bardfield District of Dunmow Union, *vice* Dr. Brasil Ronald.

ROWLEY, Charles Octavius, M.R.C.S.Eng., L.S.A., has been reappointed Medical Officer to the No. 2 District of the Barnsley Union.

RYGATE, Reginald, L.K.Q.C.P., L.R.C.S.I., has been appointed Medical Officer for the Middleton Cheney District of the Banbury Union.

SELBY, Dr. P., has been appointed Medical Officer and Public Vaccinator to the 4th District of the Faversham Union, and Medical Officer for the Infectious Hospital, *vice* Dr. Phelps, resigned.

SEMPLE, Dr. Queensferry, has been appointed Medical Officer to the Parish, by the Dalmeny Parochial Board.

SMITH, H. L., M.K.Q.C.P., L.R.C.S.Irel., has been appointed Medical Officer to the Eastern District of the Cerne Union.

SMITH, K. R., M.D.Lond., B.S., M.R.C.S., has been appointed Medical Officer for the 7th and 8th Districts of the Totnes Union, *vice* J. A. B. Thompson, M.D.Glasg., resigned.

SOMERVILLE, John, M.B., C.M., has been appointed Resident Assistant Medical Officer to the Workhouse Fir Vale Pitsmoor Sheffield Union, *vice* Frank Jeeves, at £100 per annum.

SULLIVAN, F. W., L.R.C.S.I., L. and L.M.K., and Q.C.P.I., has been appointed Medical Officer and Medical Officer of Health to the Navan Union, *vice* Dr. Nicholls, deceased.

SWALLOW, F. McDonald, L.R.C.P., L.R.C.S.Edin., L.S.A., has been re-appointed Medical Officer of Health to the Silkstone District of the Penistone Union Rural Sanitary Authority.

TANNER, Charles E., M.D., F.R.C.S.Eng., has been appointed Medical Officer to the Workhouse and North and Seale Districts of the Farnham Union.

VAISEY, T. F., M.R.C.S., L.S.A., has been re-appointed Medical Officer and Public Vaccinator to the 1st District of the Winslow Union.

VICARS, G. Rayleigh, M.A., M.B.St. And. and C.M., has been appointed Medical Officer for the Ravesby District of Horncastle Union.

WARNES, W. A., L.R.C.P., L.R.C.S.Edin., has been appointed Medical Officer for the Riddings and Ironville District of the Belper Union.

WHITE, Walter, L.R.C.P., L.M., L.R.C.S.Edin., has been re-appointed Medical Officer to the Darton District of the Barnsley Union.

WHITTLE, Glynn, M.D.Cantab., M.R.C.P.Lond., has been appointed Medical Officer of the New Bridewell, *vice* J. W. Cavanagh, L.R.C.P.Edin., M.R.C.S.Eng., deceased.

CERTIFYING FACTORY SURGEON.

ANDERSON, Alex. Richard, F.R.C.S.Eng., L.S.A., Nottingham, has been appointed Certifying Factory Surgeon, *vice* Mr. Massey, resigned.

INSPECTORS OF NUISANCES.

BASSETT, Joseph, has been appointed Inspector of Nuisances to the Lostwithiel Urban Sanitary District of the Bodmin Union, *vice* J. Burt, deceased.

BROOK, J., has been re-appointed Inspector of Nuisances to the Stratford-on-Avon Rural Sanitary Authority, at £125 per annum.

BUDDEN, R., has been appointed Inspector of Nuisances to the Guardians of the Westhampnett Union.

COLWAY, JAMES, has been re-appointed Inspector of Nuisances to the Gloucester Town Council.

DALTRY, J., has been appointed Sanitary Inspector and Rate Collector to the Wellington Improvement Commissioners, Salop.

DAVIES, Morris, has been appointed Inspector of Nuisances to the Bethseda Urban Sanitary District, *vice* R. O. Williams.

DIMOND, S. O., has been re-appointed Inspector of Nuisances for the Bristol Port Sanitary District.

FARRALL, Thomas, has been appointed Inspector of Nuisances to the Sherborne Urban Sanitary District.

FIRTH, Stuckey, has been appointed Sanitary Inspector to the Wells Rural Sanitary Authority, at a salary of £100 per annum.

FOWLER, Arthur, has been appointed Inspector of Nuisances to the Sevenoaks Rural Sanitary District, *vice* S. E. Sharman, deceased.

GLOSSOP, Wallis, has been appointed Inspector of Nuisances to the Newbold and Dunston Urban Sanitary Authority, *vice* R. Bradbury, resigned.

HOWARD, R., has been re-appointed Sanitary Inspector to the Thetford (Norfolk) Rural Sanitary Authority.

JACKSON, W., has been appointed Inspector of Nuisances to the Ramsbottom Urban Sanitary District, *vice* J. Anderton, resigned.

JAMES, James, has been appointed Inspector of Nuisances to the Fylde Rural Sanitary District, *vice* W. Riding, deceased.

LAKE, Mr., has been re-appointed Inspector of Nuisances to the East Dereham Local Board, *vice* F. W. Skipper, resigned.

POOER, Edwin, has been appointed Inspector of Nuisances of the Faversham Urban Sanitary District, *vice* Thomas Ware, resigned.

RICHARDS, E. V., has been re-appointed Inspector of Nuisances for the Wellington Rural Sanitary Authority.

RIDEOUT, A. R., has been appointed Inspector of Nuisances for the Wirksworth Urban Sanitary Authority, *vice* J. Millington.

RIDSDALE, John, has been appointed Inspector of Nuisances to the Malton Rural Sanitary Authority.

SAMBLE, J., re-appointed Sanitary Inspector to the St. Austell Local Board.

SHELDON, William, has been appointed Inspector of Nuisances to the Workington Urban Sanitary Authority, *vice* W. L. Eaglesfield.

SIDWELL, Henry T., has been appointed Inspector of Nuisances to the Rural Sanitary District of the Blean Union, *vice* S. Sladden.

STRINGFELLOW, H. W., has been appointed Inspector of Nuisances to the Chichester Town Council.

TREPESS, Frank, has been re-appointed Inspector of Nuisances to the Warwick Town Council for a further term of two years.

WATTS, Gerald, Ass. San. Inst., has been appointed Inspector of Nuisances to the Borough of Cambridge, at 35s. per week.

WHEAT, Thomas, Cert. San. Inst. Inspector of Nuisances, Dewsbury, has been appointed Inspector of Nuisances to the West Hartlepool Town Council, at £120 per annum.

WHITMORE, C., has been re-appointed Inspector of Nuisances to the Bromsgrove Rural Sanitary Authority.

WRIGHT, J. W., has been re-appointed Inspector of Nuisances to the Bingham Rural Sanitary Authority.

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Public Analyst.

Thomas, J. W., has been re-appointed Public Analyst to the Borough of Cardiff.

Surveyor.

Lovegrove, E. J., has been appointed by the Luton Town Council, Borough Surveyor and Engineer.

Clerks.

Clarke, James, has been appointed Clerk to the Guardians of the Preston Union, *vice* G. Dixon, deceased.

Genn, John H., has been appointed Clerk to the Falmouth Guardians, *vice* W. T. Genn, resigned.

Leather, Francis H., has been appointed Clerk to the Guardians of the Weobley Union, *vice* H. A. G. Samson, resigned.

Leigh, George, has been appointed Clerk to the Bakewell Guardians.

Rodd, R. R., jun., has been appointed Clerk to the Guardians of the Parish of East Stonehouse, *vice* Mr. R. R. Rodd, sen.

RESIGNATIONS.

Bell, T. T., Inspector of Nuisances to the Matlock Urban Sanitary District.

Bradford, James E. G., Clerk to the Guardians of the Highworth and Swindon Union.

Earlam, Robert, L.R.C.P., L.F.P.S.Glas., Medical Officer for the Abbots Bromley District of the Uttoxeter Union.

Gardner, Frederick, M.R.C.S., L.S.A., Medical Officer of the No. 7 District of the Barnstaple Union.

Gem, W., L.K.Q.C.P.Irel., L.R.C.S.I., Assistant Medical Officer to the City of London Infirmary.

Graham, Hewett, Vestry Clerk of Barking.

Harris, A. Wellesley, M.R.C.S., L.S.A., Assistant Medical Officer of the Holborn Union Infirmary.

Hart, Alfred, Inspector of Nuisances to the Ashbourne Urban District.

Hawkins, Isaac Thomas, Inspector of Nuisances to the Westhampnett Rural Sanitary District.

Jeeves, Frank, L.R.C.P., M.R.C.S., Resident Medical Officer at the Workhouse of the Sheffield Union.

Mace, J. M., Assistant Clerk of the Tenterden Union.

Mace, Wm. G., Clerk to the Guardians of the Tenterden Union.

Mott, John E., Assistant Clerk of the Greenwich Union.

Pearse, Frank, L.R.C.P., M.R.C.S., Medical Officer of the Colyton and Shute Districts of the Axminster Union.

Phelps, Philip, L.R.C.P.Edin. and L.M., Medical Officer of the 4th District of the Faversham Union.

Slinn, W. S., L.S.A., Medical Officer and Public Vaccinator to the Ampthill District of the Ampthill Union.

Thompson, Dr. W. P., Assistant Medical Officer to the Woolwich Infirmary.

Wood, James A., M.R.C.S., L.S.A., Medical Officer for the Sheepshed District of the Loughborough Union.

VACANCIES.

Medical Officer.—The Guardians of the Hartlepool Union require a Medical Officer and Public Vaccinator for the District of Greatham. Salary (exclusive of extras) £30 per annum. Applications to Geo. Kilvington, Esq., clerk, Board Room, Municipal Buildings, West Hartlepool, by May 28.

Assistant Medical Officer.—A gentleman is required to fill the post of Second Assistant Medical Officer at the Kent County Lunatic Asylum. Present number of inmates 820. Salary £120 per annum, with furnished apartments, board and attendance. Applications by May 19, to Allen Fielding, Esq., clerk to the Committee of Visitors, Canterbury.

Assistant Medical Officer.—Required for the Hants County Asylum a Third Assistant Medical Officer, who must be doubly qualified and registered under the Medical Act. Age not to exceed 27 years, and unmarried. Previous asylum experience not necessary. Salary £100 per annum, increasing to £125 with furnished apartments, board, washing, and attendance. Applications, with testimonials, by May 21, addressed to the Committee of Visitors, Knowle, Fareham.

Medical Officer.—The London County Council are inviting applications for the post of Medical Officer for District D of the Fire Brigade; must be a qualified surgeon; will be required to reside in the district. Remuneration at the rate of twenty shillings per annum for each man in the force within his district, such payment to include cost of medicine, surgical appliances, &c. Present number of men 78. No superannuation or retiring allowance. Applications, addressed to the Clerk of the London County Council, Spring Gardens, must be sent in by May 22, and endorsed "Application for Post of Medical Officer."

Town Clerk.—The Corporation of Eastbourne are prepared to receive applications from properly qualified persons for the office of Town Clerk. Salary £500 per annum. The gentleman appointed will have to provide all necessary clerical assistance. Applications to the Mayor, Town Hall, Eastbourne, by May 19, endorsed "Application for Town Clerkship."

Surveyor and Inspector of Nuisances.—The Fareham Local Board require a Surveyor and Inspector of Nuisances, having a practical knowledge of building and sanitary works and road making. Will be required to prepare plans, specifications, and estimates of cost; will also be required to superintend the waterworks, &c. Must reside at the Board Offices and devote his whole time to the duties of the office. Salary £130, to be increased to £150. Applications, marked "Surveyor," to reach the Clerk, Leonard Warner, Fareham, Hants, by May 21.

Inspector of Nuisances.—The Rural Sanitary Authority of the Petterspury Union require a duly-qualified and experienced person as Inspector of Nuisances. Salary £70 per annum, to include all expenses. Appointment for one year from June 24. Applications, endorsed "Inspector of Nuisances," to W. R. Parrott, Esq., Clerk, Stony Stratford.

Inspector of Nuisances and Surveyor.—The Battle Union Rural Sanitary Authority require the services of a thoroughly competent person to act as Inspector of Nuisances at a salary of £70 per annum; and Surveyor at a yearly salary of £10. Preference given to one holding certificate of the Sanitary Institution of Great Britain. Applications, endorsed "Inspector of Nuisances, &c.," to F. Gorham Ticehurst, Esq., Clerk's Offices, Battle, by May 29.

District Surveyor.—The Chadlington (Oxon.) Highway Board require a District Surveyor for the parishes within the district which surround, but does not include, Chipping Norton. Salary £150. Applications, stating age, &c., with testimonials (not exceeding three) as to character and competency to perform the duties of the office, to be sent to the Clerk to the Board, A. C. Rawlinson, Chipping Norton, Oxon., by Monday, May 19.

Inspector of Pavements.—The Commissioners of Sewers of the City of London require above. Salary £150, with uniform. Applications to be sent to Henry Blake, Principal Clerk, by Friday, May 23.

Road Inspectors required to supervise the work of maintaining the main roads of the County of Hertford. Particulars of duties and forms of application to be had of Urban A. Smith, 2, Victoria Mansions, Victoria Street, S.W.

Clerk.—The Todmorden Local Board require the services of a Clerk. Applicants to state age and salary required. Communications, endorsed "Clerk," must be addressed to Mr. William Jackson, Byrom Street, Todmorden, by May 20.

Clerk.—The Hornsey Local Board require the services of a junior clerk in the Surveyor's Department of the Hornsey Local Board. Commencing salary £75 per annum. Knowledge of book-keeping and shorthand. Applications, endorsed "Junior Clerkship," by May 21, to T. De Courcy Meade, Esq., Engineer and Surveyor, Local Board Offices, Southwood Lane, Highgate.

DEATHS.

Baly, Joseph S., M.R.C.S., L.S.A., Medical Officer of the Workhouse of the Warwick Union.

Denny, Henry, Inspector of Nuisances to the Rural Sanitary District of the Erpingham Union.

Hindmarsh, W., Inspector of Nuisances to the Rural Sanitary District of the South Shields Union.

Jessop, H. E., L.R.C.P.Edin., and L.M., Medical Officer of the No. 4 District and Workhouse of the Cheltenham Union.

Walker, John H., L.R.C.P.Edin., M.R.C.S., Medical Officer of Health to the Pickering Urban Sanitary District of the Pickering Union.

Warren, John, Inspector of Nuisances to the New Mills Urban Sanitary District of the Hayfield Union.

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LEEDS CORPORATION THREE PER CENT. DEBENTURE STOCK.—The Corporation of Leeds are prepared to receive applications for this stock at par. Particulars to be obtained of William Derry, Borough Accountant, Leeds.

THE OSWALDTWISTLE LOCAL BOARD.—This Board are prepared to receive loans to a limited extent on security of the rates of the township at 3½ per cent. interest. Applications to be sent to me the undersigned, Wm. Sandeman, Clerk, Local Board Offices, Oswaldtwistle, near Accrington.

SHEFFIELD CORPORATION THREE PER CENT. STOCK.—Issue of £371,320. (Authorized by the Sheffield Corporations Acts 1883 and 1889.)—The Corporation of Sheffield give notice that they are prepared to receive applications for the above sum of Sheffield Corporation £3 per cent. Stock. Minimum price of issue £100 per cent. Interest payable half-yearly, on March 1 and September 1, at the Sheffield and Hallamshire Bank, Sheffield; or by their London Agents, Messrs. Glyn, Mills, Currie, & Co., 67, Lombard Street. No sum less than £50 of Stock will be allotted, and any amount in excess of that sum must be a multiple of £10. Under the Trust Investment Act, 1889, this Stock is an available investment for every trustee who is not expressly forbidden by the instrument creating his trust to invest in Corporation Stock. Forms of prospectus, &c., and all information required will be supplied by W. Fisher-Tasker, Registrar, Borough Accountant's Office, Bridge Street, Sheffield.

LUDLOW UNION.—The Rural Sanitary Authority invite tenders for a Loan of £1,300, on security of the separate rates, in the nature of poor rates, repayable by equal annual instalments of principal and interest combined in thirty years. Tenders, stating rate of interest required, cost of mortgage, and other charges, endorsed "Offers for Loan," to reach the undersigned by May 29. Wm. J. Holyoake, Clerk, Poor Law Offices, Ludlow.

CONTRACTS.

BOROUGH OF HASTINGS MAIN DRAINAGE SEWAGE PRECIPITATE WORKS.

THE Corporation invite Tenders for the construction of Ram Well, Engine, Press, and Store Houses at their sewage works on the Salts, at the west end of St. Leonards.

Specifications may be seen, and form of Tender and bill of quantities obtained, at the offices of the Borough Engineer, Mr. P. H. Palmer, A.M.I.C.E., Town Hall, Hastings.

Sealed Tenders, endorsed "Tender for Ram Well, Press, and Store Houses, &c.," to be forwarded to the Town Clerk, Mr. Geo. Meadows, Town Hall, Hastings, by Saturday, May 31.

ALTERATION OF BRIDGE.

THE Runcorn Improvement Commissioners invite Tenders for the alteration and improvement of Waterloo Bridge.

Plans and Specifications may be seen at the Surveyor's Office. Tenders are to be delivered to Mr. E. Marshall, Secretary, Town Hall, Runcorn, by May 27, endorsed "Tender for Alteration to Waterloo Bridge."

CONSTRUCTION OF RESERVOIR.

THE Moulin Local Authority invite Tenders for the construction of a stone reservoir near Baledmund.

Plans and Specifications may be seen and copies of schedules obtained at the offices of Mr. Hugh Mitchell, clerk, Pitlochry, or from Messrs. Leslie & Reid, 72A, George Street, Edinburgh. Tenders, endorsed "Tender for Reservoir," are to be forwarded to the Clerk by May 19.

MANCHESTER CORPORATION WATERWORKS.—THIRLMERE AQUEDUCT.

THE Waterworks Committee invite Tenders for about 390 tons of cast and wrought-iron work and rolled steel girders.

Drawings may be seen, and Specifications and form of Tender obtained, on application to Mr. G. H. Hill, C.E., Albert Chambers, Albert Square, Manchester.

Sealed Tenders, endorsed "Thirlmere Aqueduct, Contract J, Tender for Ironwork," and addressed to the Chairman of the Waterworks Committee, to be forwarded to Mr. T. W. G. Barry, Waterworks Offices, Town Hall, Manchester, by Tuesday, May 20.

3 miles of pipe 6-in. diam., and about 3 miles of pipe 8-in. diam., together with other works in connection therewith.

Drawings and Specifications may be inspected, and forms of Tender obtained at the office of the Company, No. 3, Nolton Street, Bridgend, Glamorganshire, and at the office of Messrs. T. and C. Hawksley, Civil Engineers, 30, Great George Street, Westminster, S.W.; and Tenders must be delivered at the office of the Company at Bridgend by Wednesday, May 21.

LUDLOW UNION.

THE Rural Sanitary Authority invite Tenders for:—

1. 330 yards of cast-iron pipe 6-in. diam.
   495 " " 5-in. "
   4,041 " " 3-in. "
2. The supply of 10 sluice valves and 43 hydrants.
3. The laying the above pipes and fittings.

Drawings and Specifications may be seen, and form of Tender obtained on application to Wm. J. Holyoake, Clerk to the Authority, 5, Old Street, Ludlow, and further information, if required, may be had from the Engineer, W. Wyatt, Esq., Wem, Salop.

Sealed Tenders, endorsed "Water Supply," to be addressed and delivered to the clerk by Thursday, May 29.

SANDBACH WATERWORKS.

THE Sandbach Local Board invite Tenders for the erection of a brick tower for their new waterworks. Plans and Specifications may be seen at the office of the Local Board. Tenders must be delivered by Monday, May 19.

COMPETITION.

THE HYGIENE OF INFANTS.

THE Paris Academy of Medicine has given for competition a prize of the value of 1,000 francs for the best work on the hygiene of infants. The following is the question proposed: To determine what are, in the artificial feeding of infants, the value and the effects of raw milk, warmed or boiled milk respectively. The papers, which should be written in French, the other academical rules being observed, are to be forwarded to the Academy before March 1, 1891.

NOTES AND QUERIES.

Having for some time back been in the receipt of Queries appertaining strictly to sanitary work, and which it would be easy to answer without having to refer our correspondents to competent professional advisers, we have opened a column in which to register such Queries and Replies thereto as can fairly be expected from us; and our subscribers and readers are invited to make such use of this column as will tend to benefit themselves and the community. Both Queries and Replies will, however, be subjected, if unnecessarily long, to strict curtailment.

FOOD AND DRUGS ACT, 1875.

Some few weeks back I obtained several samples of milk under the Food and Drugs Acts. One of the certificates I received from the public analyst was as follows: Added water 11 per cent., the said sample was also deficient in butter fat to the extent of 20 per cent. Upon this I took out two summonses, although there was only one purchase, being of opinion that two distinct offences had been committed, one under sec. 6, and one under sec. 9. Am I correct, or what is your opinion. Is there any case you can give or quote which is on all fours with this? At present the magistrate is against me, being of opinion that inasmuch as there was only one purchase there can be only one offence. A. G.

[It seems that on the analysis a conviction under either sect. 6 or sect. 9 might properly be asked for and obtained. Both offences have been committed, but with respect to the same sample, and no court would under the circumstances think of imposing more than one penalty for the two. There may of course be reasons which make it desirable to press for a conviction on each summons, and, if pressed, the court ought to convict. The recent case of Pain v. Broughtwood, reported in the *Law Times* of April 19, is in point as to there being an offence under sect. 9.—ED.]

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ORIGINAL PAPERS.

THE COLLAPSE OF THE OPPOSITION TO THE NOTIFICATION OF INFECTIOUS DISEASE.

By ROBERT FARQUHARSON, M.D., M.P.

THE facts lately recorded in the SANITARY RECORD in relation to the Infectious Notification Act have shown in the clearest light, the great, and, we may say, the unexpected success which has followed its introduction. A large number of localities have adopted it without difficulty, great sanitary advantages have already resulted from the early detection of disease, and we are surely not far wrong in predicting future reductions of death-rate and general improvement in the public health. The question is a natural one, whether the time has not now arrived for compulsion, and whether the voluntary action of so many of our great towns is not a sure indication that public opinion is ripe for the universal adoption of the Act. The abstract answer would undoubtedly be yes; but as a matter of expediency, Mr. Ritchie was no doubt judiciously diplomatic, when he told the House not long ago, that it might be well to allow a further extension of permissive working before putting in force the full powers of compulsion. Sooner or later they are bound to come, and it is well to educate our minds up to them meanwhile by a careful study of what is being done by the spontaneous action of sanitarians throughout the country.

But what are our opponents doing? We look in vain for proof or even assertion of the great evils of notification, of the shattered confidence, the strained professional relations, the injury to industrial occupation, the inconvenience and expense and even actual danger that were so freely predicted during the earlier discussions on the Bill. Surely there has been time enough to detect these things if they exist at all, and if friction and inconvenience have resulted from the operations of the Act we should have heard something of them by this time.

We have a shrewd suspicion that nothing of the kind has taken place. The bogies of suspicion loomed large through the mist of prejudice, but we have come a little nearer to them now, and found out how flimsy and unsubstantial they really are. And one of the most convincing proofs of the collapse of the opposition comes from the source which at one time seemed inclined to take up a definite attitude of hostility. It will be remembered that when the Kingston Improvement Bill came before the Select Committee on Police and Sanitary Regulations, one of the medical practitioners appeared to give evidence, and to state the objections of himself and some of his colleagues to the proposal of the locality to adopt the notification clauses. The arguments used, however, were not sufficiently convincing to persuade the committee to reject the clauses, and they passed unanimously. Various attempts were afterwards made both in the press and on public occasions to prejudice our decision, and to show that notification had been forced on unwilling Kingston, and we naturally waited with much interest for the report of the medical officer of health, and the statement to be therein made of the difficulties, if any, he met with in carrying out his duties, and the success which had attended the enlarged powers conferred on him, and here is what Dr. E. M. Shirtliff writes in his annual report for 1889:—

"1889 being the first year of the working of the Infectious Diseases Notification Act in the borough, you will naturally wish to know how it has succeeded. I am therefore happy to say that the notification has been faithfully carried out by all medical gentlemen who may have been concerned; in some instances householders have defaulted, but only through want of knowledge; and a message through the inspector has brought in the notification at once. I have acted up to the pledge I gave, at the time of the passing of the Bill, and have done my spiriting as gently as possib e; and am very pleased to add that in no instance have I come into collision, in any way, with my medical *confrères*, in thanking whom I am sure I shall represent the feelings of the entire corporation. In a few instances householders have been rather disagreeable; they chafe very much at the enforced isolation for such a lengthened time as is necessary in scarlet fever; especially when it is of so mild a type as prevailed in the latter part of the year; forgetting that a mild case in one child may assume in the next a bad and virulent form, when they would be the first to clamour for the prolonged isolation. I am sure that the operation and effects of the Notification Act have amply justified the perseverance in carrying it through Parliament; had it not been for the Act, I have but little doubt that this year would have seen a bad outbreak of epidemic, and possibly virulent scarlet fever. By its means, we had early information of cases occurring in the families of charwomen, tailors, dressmakers, laundresses, and so forth; by which information we were able to at once minimise the danger of conveyance of the infection, by either, as in the case of tailors, making the men lodge out; or in the other cases stopping the women from their work, and in all cases isolating the patient in a separate room. In all such cases your committee authorized a weekly payment to, in some degree, recoup those who either abstained from their work or lodged out. Of course there is no question as to the superior advantages which an isolation hospital would possess to the means we are now adopting; in fact it is the necessary complement to notification, as on receipt of notification, and where necessary, the cases could be at once removed and the place disinfected, and all further danger probably obviated. If by some arrangement and at a moderate cost such means could be adopted, prudence would rejoice and sanitary administration be vindicated. During the year 28 notifications were received from Canbury Ward (including 4 from the barracks) affecting 16 homes; comprising 2 typhoid, 2 diphtheria, and 24 scarlet fever; 17 from the Hill Ward, affecting 14 homes (1 diphtheria, 16 scarlet fever); Norbiton Ward, 4 (2 typhoid, 1 scarlet fever, and 1 diphtheria); Town Ward 4 (all scarlet fever). Total 53."

We do not think that we can add anything to this plain unvarnished tale. Here is success where failure was predicted; success of the very best and most practical kind, immediate and complete, and due in no small degree to the tact and discretion with which Dr. Shirtliff started the working of a new and somewhat complicated bit of machinery.

DANGERS OF BORAX AS A PRESERVATIVE.—The German Government has forbidden contractors to supply the navy with preserved articles of food containing boric acid. This order is the result of the trial of a new preservative composed of equal parts of borax and salt, which has been sold as harmless. It was found that persons partaking of meat preserved with this agent experienced gastric derangements.

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THE HOUSING OF THE POOR IN PROVINCIAL TOWNS.*

By Fred Scott.

The title of this paper has been chosen for me, otherwise, for sake of precision, I would have selected "The Improvement of Artisans' and Labourers' Dwellings," or "The Better Housing of the Working Classes." These, I need scarcely remind you, are the terms used in the several Acts of Parliament relating to the subject, and I do not know of any Act in which the term "housing of the poor" is used. The reason for this I take to be that the word "poor" is too indefinite, and its use would seem to imply an obligation to classify the poor, and the fixing of an arbitrary standard of eligibility for the occupation of dwellings provided under the Acts. This would involve proceedings of such an inquisitorial character that they would inevitably defeat the objects aimed at. If the term is used as applying to the whole wage-earning class whether the individual or family can live comfortably and even save money or cannot do so, it is objectionable as not being strictly applicable to an important section of those for whom provision is necessary, viz. well-paid artizans and labourers—the more independent of the working-classes who, as a rule, are very sensitive. It is not understood literally and as a comparative term by them, but rather as carrying with it in some degree the stigma associated with pauperism.

In objecting to any attempt at classification of the poor I must make one qualification. The poor may be divided into two classes—the deserving and the undeserving. The latter, who were once described by a late eminent statesman as the "residuum," may easily be "ticketed," so to speak, by those who have to deal with working-class dwellings, and nothing short of a system of sanitary police espionage such as that exercised in the case of registered lodging-houses will, in my opinion, prevent this irreclaimable class from being a constant source of loss to property-owners, and of danger to their neighbours and the community. It is for the statesman to plan how this class may be isolated for the purpose of such supervision. If feasible, the adoption of such a policy would, I am convinced, have a far-reaching influence for good.

I propose to deal with my subject mainly as affecting Manchester and Salford, the towns with which I am most familiar. and assuming that the condition of cottage-dwellings in those places is not much if at all worse than in other large towns of corresponding age and character of population, I take it that what applies to them applies approximately to Liverpool, Glasgow, Birmingham, Leeds, Sheffield, &c.

I shall deal with my subject under three heads, viz:—

1. The need of healthy dwellings in provincial towns.
2. The difficulties in the way of effecting structural alterations on a large scale.
3. Methods of dealing with the difficulty.

The Need.

Manchester and Salford.

As long ago as 1877 I undertook, in conjunction with a colleague, an inquiry into the condition of cottage dwellings in Manchester and Salford with a view to providing data for special memorials from the local sanitary association to the respective corporations in favour of the adoption of the Artisans' and Labourers' Dwellings Acts. We visited the slums very extensively, and made notes of what we saw on the spot. If I reproduced those notes it is not unlikely that you would think my picture much too highly coloured. I shall therefore quote instead what has been written by the responsible officials of the two corporations. In a report dated 1884, the late medical officer of health for Manchester (Mr. Leigh), in speaking of No. 1 District—Ancoats—the old workshop portion of the city, said, "Nearly the whole of the houses were built before 1830. There are a great number of back-to-back houses in all parts of the district. The width of the streets varies from 30 feet to 4 feet, the greater number of them being 16 feet or 17 feet wide. The passages vary in width, and are only 2 feet 6 inches wide in some instances. In many cases the backs of the houses are too near to each other. The streets are for the most part paved and sewered. The houses, as a rule, are without cellars, and have no ventilating spaces under the floor. They rise directly from the ground. The outside walls are 9 inches thick, and the inside walls are 4½ inches or 3 inches thick. They smell fusty. The ceilings of some are only 6 feet from the floor. The timber in many cases is in a state of decay. Houses in such a condition, and so erected, cannot be otherwise than damp. The absence of any provision to prevent the moisture of the ground rising into the walls, and the thinness of the latter affording so little defence against rain, the interior can seldom or never be as dry as a house should be. From the want of subjacent ventilation, any emanation from the soil must find immediate vent into the houses."

Of District No. 2 he said, "The houses are old and back to back, and were built before 1830. The remaining portion were erected between 1830 and 1850. There are several courts in the district. The width of the streets ranges from 36 feet to 8 feet, the average width being 18 feet. The passages between the backs of the houses are small, and the passages between the backs of the houses that have yards are insufficient. The houses without yards are old and dilapidated for the most part, and not suitable places for human habitation. The rooms are small and damp, and the air is confined by the narrowness of the courts. The streets are for the most part paved and sewered, and are in fair condition, but the flags in the courts are in many cases in bad repair."

Sub-districts 3, 4, 5, 6, 7, 8, 9, 10, 11, and 12 are described in almost identical terms. In a report by Mr. Leigh, dated 1887, and published after his death, speaking of St. George's and Ancoats districts, said, "The houses are amongt the oldest in the city, the walls saturated with animal exhalation, and reeking with polluted atmosphere. . . . Most of the streets in which these cottages lie are narrow, little more than alleys, with few crossings, and utterly deficient in ventilation. . . . Let anyone accustomed to a better condition of life put his head into one of them, and he will be met with a mephitic atmosphere the like of which is not to be found in the domicile of any other animal. Stables and shippons, and even pigstyes, have their peculiar smells, but they are not poisonous, or repulsive, or offensive as these. No animal could live in them and flourish. To describe their nauseous character, I have sometimes said, in a bantering spirit, 'Put a pig into one of them, and feed him on the best for a twelvemonth, and he will come out a lean pig.' And yet industrious men and women and little

* Read at the Conference of the Housing of the People, National Liberal Club, May 1, 1890.

children live in these, and their weak frames and pallid faces tell of the surroundings."

When the Sanitary Association presented its Memorial to the Salford Corporation in 1878, the then medical officer of health, Dr. Tatham, now medical officer of health for Manchester, reported upon it to the Health Committee as follows:—"The most cursory glance at the above report will confirm the statement of the reporters, that the unhealthy condition of things there depicted is mainly dependent upon structural defects. which are quite beyond the sphere of mere alterative efforts, and will point to entire and unconditional demolition of the property in large blocks at a time as the only remedy."

I may add that, with the exception of a slight clearance by the corporation in the case of an infamous cluster of immoral houses and a limited clearance for railway extension, the great mass of property referred to above remains untouched, and the only difference now is that after 12 years it is so much worse from the continuous decay and pollution going on during that period. In support of this statement I may quote part of a resolution passed in April 1889 at a conference of working-men in the borough:—

This conference, composed chiefly of working-men who live in Salford, having considered the question of the condition of the homes of the people, and having heard statements on the subject from members of the Salford Town Council, is of opinion—(1) that a number of families are so housed in Salford that for them morality is more difficult than for others, and common decency almost impossible; (2) that unless the dwellings are improved it will be impossible to lower the death-rate, which in some parts of the borough is appallingly high, and equally impossible to raise the morals of the community.

For property of this class rents are exacted for which dwellings built upon the most approved modern principles ought to show a fair return. In a paper read by me before the Manchester Statistical Society twelve months ago, on "The Condition and Occupations of the People of Manchester and Salford," I gave the results of an inquiry which embraced 4,402 families, representing 19,271 persons. The information, which was obtained from direct inquiry by the Sanitary Association's visitors, included as items, rent paid, and use made of sleeping apartments as showing the extent of over-crowding. The following results in respect of those particulars were shown.

Rent.—In Manchester answers as to rent were obtained in 1,512 cases; of these only 201 paid less than 3s. per week, whereas 1,311 paid from 3s. to 7s. 6d. In Salford out of 1,398 answers only 81 tenants paid under 3s., and 1,217 paid from 3s. to 7s.

Over-crowding.—The result of these rents in over-crowding was found to be as follows:—

MANCHESTER.

				Per cent.
No. of cases where more than 2 persons used 1 bed-room	841	out of	1,155	= 72·8
Ditto where more than 4 persons used 2 bed-rooms	523	,,	1,037	= 50·4
Ditto where more than 6 persons used 3 bed-rooms	54	,,	122	= 44·2
Ditto where more than 8 persons used 4 bed-rooms	3	,,	11	= 27·2

SALFORD.

				Per cent.
No. of cases where more than 2 persons used 1 bed-room	372	out of	571	= 65·1
Ditto where more than 4 persons used 2 bed-rooms	565	,,	1,247	= 45·3
Ditto where more than 6 persons used 3 bed-rooms	53	,,	188	= 28·1

By the provision of model lodging-houses the experience of Glasgow* shows that over-crowding of the most objectionable kind—*i.e.* by male lodgers—might be greatly diminished.

THE DIFFICULTIES.

The chief of these are:—

(*a.*) The great cost of effecting a radical cure by clearance and re-building.
(*b.*) The force of interested opposition.
(*c.*) The ignorance and apathy of the sufferers.

(*a.*) *The Cost.*—The Manchester Corporation has recently determined to make some clearances of insanitary property. The condemnation of these areas was one of the first acts of the new medical officer of health (Dr. Tatham), who has been in office about twelve months. The areas measure respectively—

No. 1.—19,271 sq. yards.
,, 2.— 4,233 ,,
,, 3.— 863 ,,
,, 4.— 956 ,,

Total—25,323 sq. yds. = 5 a. 0 r. 37 p.

The estimated cost of land, new buildings, &c., is £103,375, or, after deducting value of land, materials sold, &c., a nett cost of £53,005; that is the amount sunk for the public good on which no return from a commercial point of view is expected. On the permanent value the experience of Liverpool shows that about 4 per cent. may be anticipated. The number of persons disturbed and re-housed by this scheme is 1,870. The annual cost to the ratepayers for the direct protection of that section of the community against the dangers of unhealthy dwellings and the contingent protection of the general community may be shown as follows:—

Loan of £103,375 at 3 per cent., say ...	£3,100
Less return on new buildings, value £53,005 at 4 per cent. per annum ...	2,120
	£980

When it is remembered that, as stated by the late medical officer of health, Manchester as a residential city is mainly one of cottages, it will be clear that only a very small portion is dealt with by this scheme; indeed I have it on high authority that probably £5,000,000 would be required to complete the rebuilding of the more or less unhealthy cottage dwellings in the city. It is obvious, therefore, that extension of the present effort must necessarily be slow. But much may be done by variation of method. The scheme now being prosecuted is undertaken under Cross's Acts, which require the following procedure: The officer of health condemns the property; the Council adopts his report and prepares a scheme which is submitted to the Local Government Board; that authority holds a local inquiry, and if the scheme be approved the corporation obtains compulsory powers of purchase. It does not follow, however, that they will obtain the property at a reasonable price; arbitration, as now permitted, is always an expensive method of purchase, while in private negotiation influences are not unlikely to operate that will secure for the owners a very generous equivalent for what they sell. Thus,

* See SANITARY RECORD, p. 534, May 15, 1890.

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I am quite prepared to learn that the ultimate cost to the ratepayers of this first clearance will be considerably more than the nett amount estimated.

The procedure to which I apprehend the Manchester Corporation will in future have to resort more freely is that provided by Torrens' Acts. It is as follows:—The medical officer of health condemns as under Cross's Acts; his report is referred to the engineer and surveyor who has to report also to the council. If both reports agree copies of them are sent to the owners, with notice to appear before the local authority to state grounds of objection if any. After this the local authority must make an order in writing, which is subject to appeal to the Court of Quarter Sessions. If the court approve of the order, the owner has to make structural alterations at his own cost to the satisfaction of the engineer, in cases where it is admitted that the houses are capable of being rendered healthy by alteration; or in cases where demolition is insisted upon, he must pull down but need not rebuild. Self-interest, however, usually settles this point. In both cases the owner may require the local authority to purchase; and if this be done the authority must pull down and may erect either labourers' dwellings or lodging-houses, dedicate the site to public health purposes, or sell or let without special restrictions. For either of the first two cases they may borrow public money, but no greater rate than 2d. in the £ for one year can be levied. The purchase money may be fixed by agreement or arbitration, and there is no appeal from the arbitrator's award. The terms of purchase by arbitration under these Acts are more favourable to the authority than under Cross's Acts, but the total withdrawal of the power given to the owner to compel the authority to purchase condemned property is an amendment of these Acts urgently needed.

(*b.*) *Interested Opposition.*—Owing to the high price of land in the centre of the city, where a large population must reside to be near their work, speculative building is discouraged, and consequently property owners are enabled, as already shown, to charge high rents. Any exercise of the corporate powers in the direction of interference with this class is keenly felt by them, and they have accordingly always taken care to be well represented in the council. As indicating the influence wielded by them, I may instance the history of the building bye-laws of the city. Such an obvious necessity as an efficient code of building regulations in a place where the great majority of the dwellings are of the class whose tenants most need protection against the unscrupulous builder, has until the past year been ignored in Manchester. The code still in force is dated 1869—that is, the year after the health committee and first medical officer of health were appointed. It is very incomplete, and does not even embody all the powers relating to buildings possessed by the corporation, many of which are dispersed through various local Acts, so that nobody who desired to build could see at a glance what regulations he had to comply with.

It is just 23 years ago since the Manchester Society of Architects commenced agitating for improved building bye-laws; 15 years ago the City Council ordered the preparation of an epitome of the existing regulations. This instruction was never carried out. Eight years ago the Sanitary Association joined in the agitation, and it required incessant effort, culminating in a public meeting of several kindred societies, to get this most essential work undertaken. In the opposition to this reform the landowners, of whom there are many small holders in the city, came to the help of the property owners and jerry builders, because any increased interference by the authorities in the erection of dwellings and other premises tended to discourage the purchase of their land for building purposes. Fortunately our agitation proved successful, and now the improved code only awaits the final approval of the Local Government Board to be in operation.* It covers 55 pages of large 4to, as compared with 7 pages 8vo, the size of the old code. Even now several important recommendations of the Society of Architects are left out, the responsibility being placed by the local authorities on the Local Government Board.

(*c.*) *Ignorance and Apathy.*—There are no towns in the kingdom whose inhabitants have been so long and so earnestly taught the importance of sanitary reform as Manchester and Salford. In 1852 the Sanitary Association was formed "to diffuse a knowledge and further the observance of the laws of health," that is long before any such organization was, I believe, known even in the metropolis. Almost without interruption the activity of the Association has continued, and at no time has it been more vigorous than it is now. Notwithstanding all this effort and the strides made by general education during the past 20 years, it is only quite recently that it has been found practicable to rouse the people to action on their own account, and then only because of the alarming rate of mortality that had prevailed for some time which had attracted notice all over the country. Following the paper read by myself, to which I have already alluded, one was read by Dr. Thresh—then a resident in Manchester, now medical officer of health for Chelmsford—before the Sanitary Association and a number of kindred societies. The paper was based upon an exhaustive scientific inquiry into "the causes of the excessive mortality in No. 1 District, Ancoats." The information contained in this paper caused quite a sensation. The writer obtained from the hospitals particulars of the deaths there in 1888 of persons who had resided in the area covered by his inquiry, and he added them to those recorded in the ordinary official returns. The "true death-rate" thus arrived at was in only a few of the blocks into which Dr. Thresh divided the district less than 40 per 1,000, whereas in some blocks it was upwards of 50, 60, 70, 80, and in one case it reached the incredible figure of 91·6 per 1,000! The outcome of these papers was a series of public conferences, in which working-men were invited to take part. The formation of working-men's sanitary associations or healthy homes societies immediately followed in Salford, in Ancoats, and in Hulme, another densely-populated working-class district of Manchester. A deputation of 150 working-men from Ancoats waited upon the mayor with a memorial for the City Council demanding attention to the sanitation of their district. The present scheme followed soon after. In Salford the agitation for improved dwellings has been well sustained, and the corporation are committed by resolutions recently passed by the council to make a considerable effort in re-housing the working-classes in the borough. Ignorance and apathy still prevail largely, however, and it will require all the vigilance of voluntary sanitary organizations in both towns to counteract the influence of interested opposition and keep the people alive to the fearful price they have to pay for their indifference.

* Since this paper was read the necessary ratification has been given.

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Methods of Dealing with the Difficulty.

I have already dealt with the only methods as yet favoured by the authorities in Manchester and Salford, viz. the recent adoption of Cross's and Torrens' Acts. There is another plan open to the authorities, however, viz. the appropriation of a definite sum for the promotion of the public health by re-housing the working-classes in the same manner as at Birmingham, where an outlay of about 1½ million has been incurred for the demolition of insanitary areas and the encouragement of private enterprise to undertake the rebuilding of ordinary cottage dwellings on an ample scale. The Corporation of Birmingham has thus avoided the necessity of becoming landlord itself to any extent. The interest on capital thus sunk by any corporation for the healthy housing of the people is surely as legitimate a charge upon the rates as the cost of public parks, free libraries, baths and washhouses, art galleries, &c., however excellent and desirable these things may be. But in order to carry out a policy of this kind it is essential that men of broad views and the highest ability should be elected on the council—men against whom there cannot be entertained the slightest suspicion of using their position to serve selfish interests. In this connection party rivalry might be of great advantage. Hitherto, in my experience, partisanship has not been productive of emulation in respect of the status of men chosen as representatives of the people, and consequently those who in municipal affairs are, like myself, primarily concerned in securing the best possible administration, can only regard the influence now exerted by political feeling in the determination of the character of our local parliaments as a great evil. When it is realised how vast are the resources controlled by such a body as the Manchester City Council, and how much more directly the well-being of his constituents is affected by a town councillor than by a member of Parliament, it would seem that ratepayers ought to be at least as careful in their selection of the former as of the latter. It goes without saying that, speaking generally, the difficulty of obtaining the highest class of candidate would diminish in proportion to the degree of fastidiousness exercised in this direction by the electorate. I am bound to admit that in Manchester the Conservatives have for some time past shown a much more praiseworthy spirit in this matter than the Liberals, and it is scarcely to be wondered at that in some cases moderate Liberals give their votes to Conservative candidates fitted to represent them even in Parliament, in preference to some from their own party who are not.

Since writing the foregoing paper, which was prepared at very short notice, I have been able to collate some information about Liverpool, Glasgow, Edinburgh, Dublin, Newcastle-on-Tyne, Birmingham, and Sheffield. I take these in the order named, except Glasgow, which has been fully dealt with in last month's Sanitary Record.

Liverpool.

In a paper read by Mr. A. B. Forwood, M.P., at a Diocesan Conference in Liverpool, in 1883, "On the Dwellings of the Industrial Classes in the Diocese of Liverpool and How to Improve Them," he estimated that there were then in Liverpool some 15,000 houses more or less unfitted for habitation by reason of their situation, containing a population of 60,000 people. In order to prevent undue competition with private effort he proposed that the corporation should only provide 12,000 houses, the cost of which he estimated as follows:—

"12,000 insanitary dwellings, to be removed or improved, costing, including sites, say	£750,000
Cost of accommodation in part substitution of houses removed, say—	
2,750 three-roomed tenements on the flat system, at £150 each	£412,500
2,750 cottages at £60 each	165,000
2,750 existing tenements re-modelled at £30 each	82,500
	£660,000
Rent of 8,250 tenements at 3s. per week	£64,362
Less Interest at 3½ per cent. £23,100	
Sinking Fund 3,300	
Rates, repairs, and loss of rent 22,500	
	48,900
Surplus	£15,462
The annual interest and sinking fund on the cost of sites, and for property demolished would be	£30,000
From which deduct surplus rental... ...	15,462
Leaving an annual loss to the Corporation of...	£14,538

Or a little over 1d. in the pound on the rates.

Such a loss would, however, be more apparent than real, for the gain to the town in health means reduced poverty, diminished drunkenness, better labour in return for wages paid, and, above all, a feeling in the heart and soul of each of us that we have done something in our day and generation to ameliorate and to raise the condition, spiritual, social, and temporal, of those in poorer circumstances than ourselves."

The Corporation of Liverpool have for some years been engaged in the work of dealing with unhealthy dwellings. They have carried out the greater portion of the work under the local Acts of 1866 and 1868, the powers given by these measures enabling them to close from time to time about 2,600 dwellings, many being in detached blocks which could not be again built upon, and had to be demolished and left as air spaces. This work is still going on. In nearly all cases the corporation have paid a small compensation for properties demolished, averaging from £25 to £35 per house for back-to-back houses, that is, for freehold without chief or ground-rent. When the corporation had proceeded to the extent above-named they were obliged to consider the question of re-housing, and as they had large areas of land on their hands they offered it at a very low price to encourage private enterprise in building houses for the working-classes. There was no disposition evinced by speculative builders or others to take advantage of this inducement, and they were compelled themselves to try an experiment. This is now known as the Victoria Square block in Scotland Ward. The site contains 9,195 square yards, of which 3,924 are occupied by dwellings, and 5,271 yards as approaches, and a quadrangular open space suitably laid out and concreted for the sole use of the tenants of the buildings. The number of people displaced by the carrying out of this scheme was 1,310, of whom 1,100 were of the working-class. The

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86	3-room tenements at 5s. 6d. per week,	258 rooms.
164	2-room tenements at 4s. 3d. per week,	328 ,,
21	1-room tenements at 2s. 6d. per week,	21 ,,
	Superintendent's house	4 ,,
	Total rooms	611

The cost of these dwellings, including the market value of the site, viz. 9,195 square yards, is £70,000. The corporation have in all cases adopted the principle of charging the market value of the land only, and not the actual price paid in the first instance.

Another block of buildings has since been erected off Juvenal Street near the above described, but consisting of tenements of one and two rooms only. It is of less expensive character, and the tenements let as follows: 2 rooms at 3s. 9d. per week, and 1 room 2s. 6d. These rents include gas for apartments and staircases. This block pays 4 per cent., including, as in the Victoria Square block, a fair market value for the land, repairs, superintendence, &c. This result is considered so satisfactory that the corporation have prepared plans for further extension, and an inquiry has just been held with a view to obtaining legal sanction for the scheme which involves the demolition of 534 houses in the south and east districts. In the former the death-rate of the area to be dealt with was, in 1888, 43·3 per 1,000, and in 1889, 36·0. In the latter the rates were, in 1888, 43·3, and in 1889, 45·5. The average death-rate in the Victoria Square buildings is 17·6 per 1,000. A third block of buildings (4-room tenements) built by the Corporation about 20 years ago in Sylvester Street, are not so well appreciated as the new buildings, and indeed do not compare favourably with them in respect of light, ventilation, &c.

Within the past six years upwards of 1,300 houses have been condemned as unfit for human habitation, of which about one-half have been improved and the other half demolished. The corporation have erected one block of dwellings consisting of 33 separate houses, viz. :—

Edinburgh.

15 1-room houses with small scullery, 2s. 6d. per week.
18 2-room houses with small scullery, 3s. 6d. per week.

Throughout the whole of the old portion of the city the corporation are condemning large blocks of unhealthy dwellings which are either being improved or pulled down.

At Westport, Edinburgh, there is a block of dwellings which was erected by private enterprise about 20 years ago. It consists of 96 houses divided as follows :—

		Per week.
12	2-room houses at	3s. 3d.
54	2-room houses and small bed-room at	3s. 6d.
30	2-room houses at	4s. 7d.

The total cost of these dwellings was £12,500, and the rental is about £1,000. This property has throughout paid 5 per cent., and for the last three years 6 per cent., and in addition has accumulated a reserve fund of over £3,000, out of which the capital has been reduced to £9,000, and out of £25,000 received in rents they had only £9 in bad debts. These are a much nearer approach to self-contained houses than those in either Liverpool or Glasgow.

Unlike all the other large towns, except London, Dublin is fortunate in having had considerable provision made for the housing of the working classes by wealthy citizen. The following summary of a table given in a paper read at the Sanitary Institute Congress held in Dublin in 1884 by Mr. Edward Spencer, M.A., Secretary to the Dublin Artisans Dwellings Company, Limited, shows the extent of provision made in Dublin up to that date.

				Rents. s. d.	s. d.
Artisans Dwellings Company :—					
Tenements ...	110	3	rooms	3 0	to 5 3
,, ...	58	2	,,	2 0	,, 4 0
,, ...	4	1	,,	2 6	,, 3 0
Cottages	244	4	,,	5 0	,, 8 0
,, ...	331	3	,,	4 0	,, 6 6
,, ...	295	2	,,	3 6	,, 4 0
Great Southern and Western Railway Company :—					
Cottages	141	6	,,	3 6	,, 6 6
Midland Great Western Railway :—					
Tenements ...	7	3 & 4	,,	1 6	,, 4 0
,, ...	17	2	,,	1 0	,, 2 6
,, ...	6	1	,,	0 6	,, 1 6
Cottages	7	4 to 6	,,	2 0	,, 5 0
,, ...	42	5	,,	6 6	,, 7 0
,, ...	14	3	,,	1 0	,, 4 0
,, ...	12	2	,,	1 0	,, 2 6
Industrial Tenements Co. :—					
Tenements ...	44	1 to 3	,,	2 0	,, 4 6
Messrs. A. Guinness, Sons, & Co. :—					
Tenements ...	15	4	,,	4 6	
,, ...	52	2	,,	3 0	
Cottages and ditto.	450		under		5 0
On ground of Messrs. Lombard and MacMahon :—					
Cottages	125	4	,,	6 0	
,, ...	83	3	,,	6 0	
,, ...	800	4	more than ,,	10 0	
Thomas Vance, Esq., J.P. :—					
Cottages	38	2	,,	2 8	
,, ...	158	1 to 2	,,	3 6	,, 3 9
	3,053				
Dublin Corporation					
Tenements	140				
Ditto. Tenements just completed	86				
Total	3,279				

The death-rate in the Artisans Dwellings Company's buildings is about 17 per 1,000 as compared with 26·0, the rate for the whole city.

During the past year Sir A. Guinness has made the princely gift of £250,000 for improved dwellings in London and Dublin, the share of the latter being £100,000. This fund is to be administered by the Dublin Artisans Dwellings Company with Government aid. It is now considered that, given the aid of the corporation in the demolition of unhealthy dwellings, private enterprise will do all that is required for the healthy housing of the working-classes in the Irish capital.

Thousands of working people have been disturbed by the Corporation of Newcastle in carrying out their street improvements, but nothing has been done by that authority in the way of re-housing. Individual members

Newcastle-on-Tyne.

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of the corporation have, however, taken shares in the company formed for the purpose, viz. the Newcastle-on-Tyne Improved Industrial Dwellings Company, Limited. The first or experimental block of buildings was erected by this Company in 1870, and consists of 28 sets of two-room dwellings (front), including 2 shops and 12 single rooms (back). The rents of the front rooms range from 3s. 9d. to 4s. 6d. per week, and those of single rooms from 2s. 6d. to 3s. 3d.: the lowest rent being on the fourth or top flat, and the rent includes gas, water, and wash-houses in yard. For nine years this block paid the shareholders 5 per cent. per annum. In 1879 the directors determined to extend the buildings by the erection of 64 more tenements of two rooms each, with four large shops and a spacious reading and recreation room. As the capital required for this extension was not readily subscribed the directors borrowed one half the cost of the buildings (about £8,000) from the Public Works Loan Commissioners, repayable in equal half yearly instalments, extending over forty years, interest payable at same time on the balance owing at 4¼ per cent. Of course this obligation has proved burdensome to the Company, and, although it has always managed to pay its way since the extension, and pay a small dividend to the shareholders, this return has neces sarily been less than previously. The number of people now housed in the Company's dwellings is about 500. Mr. John Price, who is honourably known in connection with the movement for providing healthy dwellings for the working-classes in Newcastle, and to whom I am indebted for the information relating to that town, remarks on the general subject:—"Nearly twenty years residence amongst the labouring-classes has taught me that lowness of rent is a vital consideration with those of them who are dependent upon a small and precarious income, and they will put up with much inconvenience, and dispense with all embellishment for that most desirable object. At the same time it is necessary that dwellings of whatever class should be erected with a due regard to healthiness and all sanitary requirements, as we should never forget that disease ignores mere geographical boundaries, and if allowed to generate in the slums may soon find its way into the homes of the well-to-do, and destroy its victims there with impunity. On this lowest ground, therefore, none can afford to ignore the question."

The following extract from a letter received from the medical officer of health, Birmingham, Dr. Alfred Hill, explains the position in that city.

Birmingham.

"Owing to the abundant house accommodation in this city, and the activity of private builders, it has been unnecessary for the corporation to erect artisans' houses, and they have practically confined themselves to clearing away old and unhealthy property; a very large amount of such property has been bought and demolished at a cost of nearly one and a half million.

"No houses are built in the city on the 'flat' system, which does not find favour here. The town council some time ago considered the question of the advisability of erecting a block of model dwellings arranged on this plan, but the proposal was rejected. The council have since decided, however, to erect 22 model workmen's dwellings, more, however, in fulfilment of a promise than from any actual need for the houses. Financially, it is not expected that they will prove a success.

"No increase of labourers' dwellings in the town is necessary, and it seems probable that the authorities will not be called on to provide any."

In reply to my inquiry as to the housing of the working-classes in Sheffield, the medical officer of health (Dr. Theodore Thomson) writes as follows:—

Sheffield.

"Nothing has as yet been done in Sheffield either by the corporation or by private enterprise in the direction of providing a more satisfactory housing of the poor beyond the carrying out of the general law for the sanitary improvement of existing property, and the insisting upon a proper class of buildings in the case of new property. The corporation are, however, at present considering the advisability of providing a block of model dwellings for the poor in one of the more crowded districts of the borough."

DIPLOMAS IN PUBLIC HEALTH.—Mr. Augustus Constable Maybury, M.R.C.S.Eng., L.S.A.Lond., and Mr. Ifar Davis, M.B.Univ.Durham, having passed the necessary examination, have been granted the Diploma in Public Health of the Royal College of Surgeons in Ireland.

SEWERAGE MEMS.—The Cleethorpes Local Board have instructed Mr. W. H. Radford, C.E., of Nottingham, to prepare plans and obtain tenders for carrying their Beaconthorpe outfall 150 yards farther out to sea, in consequence of the tidal increase of sand on the beach.—The Rugby Union Rural Sanitary Authority has called in Mr. J. E. Willcox, C.E., of Birmingham, to report and submit a scheme for the drainage of Wolston. Mr. Willcox is also engaged by the Evesham Rural Sanitary Authority to report as to the best means of providing an adequate supply of pure and wholesome water for North and Middle Littleton.—Some time ago the Hucknall Torkard Local Board invited competitive designs from engineers for dealing with the disposal of the sewage at the various outfalls, and for the best means of effectually treating the same. After considerable discussion the schemes submitted by Mr. Herbert Walker, Assoc.M.Inst.C.E., and Mr. W. H. Radford, Assoc.M.Inst.C.E., were selected for further consideration, with the result that the scheme submitted by Mr. Walker was eventually selected by the Local Board. The system advocated by Mr. Walker is that known as the "international process," and consists of (1) the precipitation and deodorisation of the sewage by means of a magnetic precipitant and deodorant called "ferozone," which is produced from polarite by a chemical process; (2) the removal of the organic matter in solution, and the aeration of the tank effluent by passing it through a specially constructed filter-bed containing polarits, a pure and absolutely insoluble mineral substance, very hard, porous, and absorbent. The sewage will be conducted into precipitation tanks of a capacity to suit the hourly flow of sewage. Immediately before entering the tanks the sewage will receive a dose of "ferozone" by means of a patent automatic sewage mixer. After remaining in the tank a short time it will be drawn therefrom by a floating arm and conducted over the surface of the polarite filters. These filters are formed of six inches of broken stones (in which four-inch agricultural drain-pipes are embedded), three inches of gravel, six inches of sand, twelve inches of sand and polarite in equal quantities, and nine inches of fine sand, making a total depth of filtering material of three feet. The sludge deposited in the tanks will be inoffensive, having been deodorized by the ferozone. This sludge will be forced into filter-presses, and pressed into cakes ready for sale as a fertilizer. The effluent, after being passed over and through about four acres of land, will be conducted into the river Leen. Storm overflows will be arranged at various points so that the storm water will find its way direct into the river, and only the sewage will be conducted to the tanks for purification. The estimated cost of this scheme is about £4,000.

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THE DRAINAGE OF BUILDINGS, PUBLIC AND PRIVATE, IN RELATION TO HEALTH.*

By THOMAS LOWTHER, Cert. Surv. and Insp. of San. Inst., Deputy-Inspector of Nuisances, Bristol.

As you are well aware, there are several recognized systems adopted for the drainage of buildings, "both public and private," and each one according to its advocate is the best. There is not the least doubt they all answer their purpose fairly well; but, on the other hand, there are points to be considered why one should have the preference over another, under certain conditions, and as there appears to be a large diversity of opinion amongst supposed experts on this point, it behoves us, as "public officers" administering the laws of health, and having extensive dealings in advising and supervising the construction of drainage work, both in "public and private dwellings," that we should be thoroughly acquainted with what may be termed the correct principles pertaining to the drainage of buildings. Not only does the subject before us form an important feature in the duties of local surveyor and sanitary inspector, but it is largely practised by outside engineers and architects; and generally speaking, this class of work is entrusted into some local tradesman's hands, either a builder or a plumber, who perhaps has had very little experience and who has little knowledge in this particular branch of sanitation; and even in cases where the work has been entrusted to some supposed sanitary engineer's hands the results are often far from being satisfactory.

Having charge of a very fashionable district, and having had extensive dealings with re-modelling of drainage of some important buildings, I am thus brought in contact with tradesmen and supposed engineers, and am in a position to know the characters and abilities of those who are usually favoured with the preparing, carrying out, and supervision of drainage works; and I have found from experience, just as many of you must have done, that their knowledge of drainage and the advantages and disadvantages of the various sanitary appliances in use is frequently very vague. In many cases the work done by them has had to be taken out, which means a second expense and risk to health.

House drainage.

There are several systems of drainage adapted for buildings which I may enumerate as the ordinary sectional, manhole chamber system, and the recent introduction of cast-iron pipes in conjunction with either of the above.

Ordinary system.

What I mean by the "ordinary system," is where internal arrangements are carried out in a similar manner to the sectional and manhole chamber systems, but no means of inspection provided—an important matter that should always be considered in works of this sort. An intercepting trap, as usual, is fixed between the house and public sewer, with a 4-inch or 6-inch pipe attached, which generally is brought up to the surface of ground, and which is the only means of inspection employed, but only for purpose of cleansing or unstopping the trap; the same shaft is utilized for the fresh air inlet, either directly from the vertical shaft, or a branch carried to some other suitable place. By such a system it is impossible to inspect, cleanse, or test any part of the drains, either from the trap to the sewer, or from the trap to any other part of the system, and I have found that, in cases of stoppages, expensive excavations have had to be resorted to. It is, moreover, difficult to tell whether the stoppage is in the main drain or in any of the branches. In addition to great expense and annoyance, the health of the inmates is also exposed to considerable risks under such circumstances. Under a well-arranged system of drainage, these disadvantages do not arise, and therefore it is worthy of consideration. I may at this stage remark that to construct drainage work, at the present time, without ample and easy means of inspection to it, is an ill-advised proceeding, as bad as constructing chimneys or flues without access for cleaning purposes. I have also found in this system that the fresh air inlets at times are very troublesome, and instead of being inlets become outlets, which in my opinion is not only due to atmospheric influences as generally suggested, but in a large extent to the column of cold air in the 4-inch or 6-inch shaft over the intercepting trap being insufficient to resist any back pressure; of course the air blowing across the inlets in certain directions will produce aspiration, and there is not the least doubt that this assists the results complained of. Mica flap valves diminish the nuisance, but they do not carry out the object aimed at, and are very little better after a little service than the ordinary air brick; in fact, I have found them worse, as they become rigid, and thus interfere with the through ventilation. Where this system of drainage is carried out, the fresh inlet should be carried up above the main roof, terminating a little below the outlets either at the extreme end of the drain or the lowest point. Although the ventilation would be slightly sluggish, the difficulty complained of would be obviated. There are also certain conditions, especially in dull, heavy weather, when the temperature in the drains is less than the outside temperature—the foul air in the drains thus becomes denser than the outside air and falls and escapes at the inlets. Powerful exhaust cowls should always be fixed on outlet vent-pipes to assist circulation.

Sectional systems.

"Sectional system of drainage" may be understood to mean the interception of the drains in sections by fixing an intercepting trap at the foot of each soil-pipe, as advocated by Hellyer, Banner, Buchan and others. The air inlet generally being fixed immediately over the trap, the remaining underground portion of the drain being separately intercepted and ventilated.

The main advantages claimed are that should a defect present itself in any part of the internal arrangements, it becomes entirely isolated from the foul gases of the remaining drainage system. This may be worthy of our consideration, but in my opinion it is a point of very little importance in ordinary house drainage, and I specially object to the manner in which it is generally practised, as in many cases I have found a daily nuisance created with the idea of isolating an uncertain one, or a defect that may happen in years to come.

I have, in the majority of cases, found the traps and inlets a most serious nuisance; and at times the same trap has served for the sinks, lavatories and bath wastes, no trap at the same time being under or attached to each arrangement; and, speaking under favourable conditions, that at each time the W.C.s are used a rush of foul air is forced out of the foot

* Read at the meeting of Public Sanitary Inspectors of Great Britain, Carpenters' Hall, London, May 3, 1890.

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of the soil-pipes, by no means pleasant to those passing at the time, with a possibility of its blowing into the windows—not an uncommon occurrence; and, should the motions be of an infectious character, it becomes a most serious consideration. The cleansing facilities of the drains are also seriously interfered with, as the body of water is broken at the first trap, and the body of water and the velocity of flow is diminished before it reaches the main intercepting trap.

I am of opinion that this system should never be applied to private dwelling-houses, but should be confined to large institutions such as infirmaries and hospitals, more especially infectious hospitals.

In infectious hospitals it becomes an absolute necessity that the motions, washings, and dressings of the different diseases should be isolated from one another, by each dormitory or ward having separate and distinct drainage and other sanitary arrangements, which can only be accomplished by the "sectional system of drainage," and which is best managed by laying in a main drain from the sewer in a straight line, a little outside of the dormitories, with ample means of inspection provided; and in all cases a flushing tank should be fixed at the extreme end of drain—disinfectants to be added to the water in the tank, and drains flushed every twenty-four hours. The drains from the dormitories to be separately intercepted from the main drain, and the intercepting traps fixed at a point most suitable, with manhole chambers attached, and manholes at such points as may be found necessary, as at the intersection of the different branch drains; all manholes and half-pipes to be white enamel, with perfectly air-tight covers, or, better still, duplicate covers with 4 inches of fine sand between. The fresh air inlets in buildings of this class should be carried up above the main roof, and powerful exhaust cowls on the outlet pipes, as plenty of fresh air passing through the drains, &c., in these buildings forms an important feature.

The sinks, lavatories, and baths require special attention in buildings of this class; they should be trapped close up under each arrangement, and connected outside into ventilated waste pipes and ventilated inspection gullies at the foot; inspection caps in all cases should be provided at the branch waste pipes, and in cases where several branch waste pipes meet together a sealed down head ventilator could be used.

I have no doubt that you will agree with me that the drainage of buildings of this class requires special and careful consideration, or the results might prove serious to the inmates of the different wards and those visiting the premises.

You will also, I trust, agree with me, that to adopt the "sectional system" by trapping each soil-pipe at the foot, by an open trap in those buildings, or I may boldly say any other building, would be a serious mistake; and I should advise those practising this system, for isolation of defects, to abandon the same, and use lead traps and connection pieces and wiped lead joints; for in a good system of drainage the only joint in a house is that connecting the w.c. with the soil-pipe outside, and you would thus secure a perfect tight joint.

The theory of diffusion of gases through the water seal of traps has been introduced by individuals practising this system, but I should like to remind you that no such diffusion can take place in a well arranged system of drainage, as the system of ventilation adopted is so complete as to make it impossible for this to happen, and the argument only applies to drainage-work carried out by inexperienced men, in which air locks and dead ends are formed. Personally, I am of opinion that the suggestion I have recommended form the most feasible plans for the drainage of buildings of this class.

I shall now draw attention to the "Manhole chamber system of drainage." A system which I have advocated and practised years previously to my present appointment, and largely since, and which is now acknowledged and practised by all advanced sanitarians, and which I consider is the only system that overcomes the difficulties usually experienced in drainage works. Following similar lines as sewerage works, although less in magnitude; nevertheless, more skilled labour has to be employed to secure its success. The drains are laid out in straight lines from manhole to manhole, with manholes constructed over the intercepting trap, and at such other points as may be found necessary, as at the angles and the intersection of the various branch drains.

Manhole chamber system of drainage.

Too much importance cannot be attached to this system of drainage, as danger is reduced to a minimum. When properly constructed, it is simple, self-acting, has no working parts to get out of order, and permits of easy inspection, cleansing, or testing all or any part of the underground works. Daily experience proves the easy facilities that are given for unstopping the intercepting traps and drains, and defects sometimes present themselves in the underground works, which in any other system of drainage it would be difficult to localise in the house drain or in a branch, consequently expensive excavations are needed to find the defect. To secure success, good workmanship and materials form an important feature, which, of course, applies to all drainage work, but more so to this system. If either stoneware or cast-iron pipes be used for the underground drain, it is essential that they should be truly laid in straight lines with a uniform gradient, and that they be properly jointed, and in case of stoneware pipes they should rest on a concrete bed, even if the drains are outside of the house, as the joints are so numerous that some of them may get started, not only, I may say, from unequal settlement or bad workmanship, but sometimes due to the oscillation or vibration of the ground's formation, such as may be caused by heavy traffic in the streets. The manholes should be constructed of impermeable material with perfectly air-tight covers; the bottoms of chambers should be well formed in white enamel half-pipes, and well raised to prevent the bottoms of the chambers being wetted by sewage. The chamber should not be too large, but just large enough to carry out its objects, and should be so arranged that each manhole may receive several branches, even if the branch drains be carried some little distance, and thus avoid as many manholes as possible, on the score of expense. There is another point worthy of consideration in this system, that the inlets are not troublesome by acting as outlets, which appears to be due to the large body of cold air in the chambers which thus prevents any back pressure.

A new system of drainage has recently been introduced by Mr. Scott Moncrieff, who appears to have taken a great interest in this particular branch of sanitation, and great credit is due to him on that point alone.

Admitting that his system is fairly well suited for domestic drainage, it appears to be a repetition of the

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system I have just advocated, except that cast-iron pipes are used and cast-iron frames fixed in the manholes, bolted down close over the half-pipes. The use of cast-iron pipes is not a recent idea, but was practised years ago, but not to such an extent as at present; therefore the main feature appears to be in the cast-iron frames in the manholes.

The advantages claimed are: first, that the whole system may be tested at once under hydraulic pressure; second, that the walls of the chambers are not in contact with the foul vapours in the drain so as to be absorbed; third, that the quantity of fresh air passing through the drains is in excess of any other system and considered an important feature.

With regard to the first point, I am not aware that it is essential to test the whole system at once, when it can be tested in sections from each manhole and the same results obtained, which appears to me to be the most practical way of carrying out the tests; a defect may thus be detected in the branch drains, which could not be detected if the whole were tested at once, being aware at the same time that it would be impracticable to leave all the trenches open until the whole system was finished.

With regard to the second point, which principally applies to badly constructed manholes, if manholes were properly constructed of white enamel bricks this objection would not prevail.

With regard to the third point, I agree that it is essential that as much air as possible should be passed through drains, especially in the drainage of hospitals, but I am not aware that there has been much improvement in this system, so far as ventilation is concerned, over the ordinary system, as I mentioned in the commencement of the paper, and it is liable to the same results at the inlets. Mr. Newman, F.R.I.B.A., in his paper at the late Health Congress at Worcester, entitled, "THE DANGER OF EXPOSING SEWAGE TO LIGHT AND AIR," practically denounced ventilation altogether in connection with drainage. Personally, I should say that his paper was more ignored than accepted.

Professor Attfield also denounced through ventilation, maintaining that the introduction of fresh air into drains assisted decomposition. In this opinion he is backed up by others; therefore, through ventilation has been recently taxed.

Speaking generally of Mr. Moncrieff's cast-iron frames in manholes,* I am seriously afraid that if periodical inspections are not kept up, and very frequently too, the bolts will soon become so rigid as to make it impossible to loose them, and this would practically make the system aimed at useless.

Simplicity should form the most important feature in drainage work; and, if entrusted to an able engineer, I consider that the manhole system is the best yet brought to the front, on the ground I have previously maintained, either in conjunction with cast-iron or stoneware pipes.

Too much value cannot be attached to cast-iron pipes for this work, especially internal drainage, as you acquire great strength, consequently less liability to fracture, either by unequal settlement, shock, or accidents during drainage operations. You dispense with a multitude of joints, and, at the same time, secure a perfect joint. You also can obtain any length of pipe to suit special contingencies ofttimes encountered in this work. Its disadvantages are—that it is somewhat costly; more liable to become foul inside; the difficulty at times to get suitable bends and junction pieces with the required lead or sweep. I may remark, it is an easy matter to lay the lines on plans, but another matter to put them together. The disadvantage of stoneware pipes are almost entirely obviated if they are embedded in concrete. The size in either case should never exceed six inches, and should never be less than five inches in the main house-drain, the branches not more nor less than four inches.

The selection of suitable intercepting traps for this work requires careful consideration. The advantage these traps secure, is to prevent sewer gas from entering our general drainage system, which might otherwise prove dangerous. The disadvantages are many, the principal of which is that it forms a break or hindrance to the free flow of sewage. If we introduce a break or hindrance in our main drainage line by inserting a trap, it follows that the trap should be of such a shape and size as to be self-cleansing; and as we cannot rely upon more than two gallons at each flush, then the trap should contain less than that amount to be self-cleansing. I am of opinion that the best traps yet invented, and which meet the requirements mentioned, are Winser's 4-inch by 6-inch taper intercepting traps. Rogers Field's are very good traps, but they contain an excessive amount of water (*i.e.* more than Winser's); the water seal is also rather long, consequently more force is required to drive the soil through the trap. Crappers' trap, although possessing some good points, have similar objections as in Field's. Buchan's traps are fairly good traps, although more suited for the ordinary system of drainage.

It is also a very familiar practice amongst certain engineers, when undertaking this work, to carry up a separate ventilation shaft from the sewer side of the trap, to so-call ease the pressure of sewer gas and prevent it forcing through the water seal of the intercepting traps. This I do not altogether agree with. But if this system were applied and made compulsory on every house in the district it would partially solve the problem of sewer ventilation, *i.e.* the sewer gas would then be more equally distributed over a given area or district; but, on the other hand, if only one house were done here and another somewhere else, it would be no advantage, and would be unfair to the inmates or neighbours of the houses so treated. I think we could rest pretty comfortably without this extra vent-pipe, as the amount of sewer gas, if any, forced through our intercepting traps in a well-arranged system of drainage would not effect us much.

Internal fittings.

In relation to internal fittings, the w.c.s should be of the simplest character, such as the washdown, with 1½-inch flush pipes and syphon cisterns, fittings in all cases to be movable or, better still, naked. Positions of w.c. should be ventilated by inlet and outlet openings, in addition to the external windows. The sinks, baths, and lavatories should be trapped close up under each arrangement, and connected to ventilated pipes outside, with inspection caps attached for cleansing purposes, and discharged over water seal of properly trapped gullies at the foot; open heads as far as possible to be avoided. Soil-pipes in all cases should be outside and ventilated, their full size above main roof and windows, and provided with exhaust cowls.

There is one other point to which I should like to draw attention, *i.e.* the subsoil water, frequently met with where houses are built upon damp sites, or

* See SANITARY RECORD, Aug. 15 and Sept. 15, 1889.

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where the subsoil water stands high. Too much importance cannot be attached to this, as the health of the inmates living in houses under such conditions is seriously impaired by breathing air containing an excessive amount of watery vapour, and I may say I am of opinion these conditions have much to answer for in connection with diphtheria, consumption, and probably other preventible diseases. I am sorry to say this is a point often overlooked by all parties concerned, though our worthy medical officer says, "I look upon damp walls and sites almost as equally dangerous as bad drainage."

Such situations should be carefully prepared by being effectually drained, and, if possible, be distinct from the house drains, or at least intercepting from same by discharging the subsoil water into open trapped gullies outside of the premises, and the whole site concreted.

Mr. George Palmer, head of the Reading biscuit firm, and formerly M.P. for the borough, recently announced to the Town Council that he will give a park of 49 acres at the east end of the town for the public benefit of the inhabitants. He has promised to fence in the land, plant trees, and lay it out for cricket, tennis, football, and other games, and for public gardens. He asks that no intoxicating liquors should be sold upon the ground. Mr. Palmer has already given over 20 acres in another part of the town for a public recreation ground near the Thames. The Town Council passed a vote of thanks to Mr. Palmer for his gift. Previous to his last generous offer a movement was initiated to erect a memorial to Mr. Palmer's munificence.

A Cause of Consumption.—"Nothing is more certain in medical science," remarks Dr. A. Newsholme in his last annual report on the health of Brighton, "than that circumstances of over-crowding, involving a foul atmosphere and the repeated breathing of the same air, in predisposed persons, greatly favour the development of phthisis. Hence we find that consumption is more prevalent among those with indoor occupations than it is among those who spend a large proportion of their time in the open air; is more prevalent among the poor with deficient house-room than it is among the well-to-do; is more prevalent in houses situate in narrow streets, courts or alleys, than in wide and freely-ventilated thoroughfares; and is more prevalent in tenement houses than in houses occupied by only one family. The problem of the Housing of the Poor involves in its solution also the material reduction, if not the practical extinction, of some forms of tubercular disease."

The Ventilation of Schools.—Large additions and alterations have just been completed to the Falkirk Board schools and an improved system of ventilation, introduced by Messrs. Baird, Thompson & Co., ventilating engineers, London and Glasgow; their improved patent self-acting exhaust ventilators being adopted for the extraction of the vitiated air. Alterations and additions have also just been completed at Blair Lodge School, Palmont, a high-class boarding-school for boys, and which is now one of the largest and most extensive in Great Britain. Every modern improvement has been introduced into this school, and an improved system of ventilating has been carried out by the same firm, their improved patent self-acting exhaust ventilator being used for the extraction of the vitiated air, and their latest improved patent air-inlet ventilator, which introduces a supply of pure, fresh air without draughts. The system has also been introduced into the large New Abbey Parochial Hospital, erected at Paisley. The system of ventilation introduced has been subjected to very severe tests, and the results have given great satisfaction, and reflect great credit upon Messrs. Baird, Thompson & Co.

HEALTH STATISTICS OF ENGLISH WATERING-PLACES.

We are glad to be able to publish, as in previous years, reliable statistics relating to the health of our English watering-places, and again gratefully acknowledge the co-operation of many of the medical officers of health of the various urban sanitary districts comprising the principal health resorts in our endeavour to obtain really trustworthy statistics. These statistics are arranged in the accompanying table, and show most satisfactory results. In the thirty-one watering-places for which the figures are available the mean rate of mortality for the year 1889 was equal to 14·8 per 1,000 of their estimated population. In England and Wales the death-rate last year was 17·9; in twenty-eight of the largest English towns it was 19·3, and in the rural districts of the country it was equal to 16·5 per 1,000. During the first four months of the current year the mean rate of mortality in the thirty-one watering-places was equal to 16·8 per 1,000, against 22·2 in England and Wales, and 23·6 in the twenty-eight large English towns. The lowest rates during this period in the various watering-places were recorded in Shanklin, Sandown, Littlehampton, Herne Bay, Tunbridge Wells, Worthing, and Broadstairs. The highest death-rates were recorded in Southport, Cheltenham, Blackpool, Lowestoft, Weymouth, Dover, and Torquay. It should be noted that influenza was fatally prevalent in some of these towns during the period under notice, causing an exceptionally high rate of mortality from diseases of the respiratory organs. With regard to the prevalence of zymotic disease in the various health-resorts, a matter of the highest importance, it is satisfactory to note that zymotic fatality showed no marked excess in any of the towns, and that not a single death from any of the principal zymotic diseases was recorded during the first four months of this year in Aberystwith, Littlehampton, Penzance, Sandown, or Sidmouth. Among the other watering-places the lowest zymotic death-rates were recorded in Whitby, Weston-super-Mare, Tunbridge Wells, Scarborough, Hastings, and Rhyl; and the highest rates in Malvern, Matlock, Shanklin, Blackpool, Ilfracombe, and Dover. The mean zymotic death-rates in the thirty-one watering-places dealt with in the table did not exceed 1·2 per 1,000, which was considerably below the general zymotic rate in England and Wales during the same period. Among the various health-resorts the highest proportional fatality of measles during the first four months of the current year was recorded in Blackpool, Shanklin, and Dover; from diphtheria in Southport and Blackpool; from whooping-cough in Brighton, Clifton, Dawlish, and Ilfracombe; and from "fever" in Yarmouth. The remarkable freedom from scarlet fever enjoyed by these watering-places is highly satisfactory; in no fewer than twenty-five of the thirty-one health-resorts not a single fatal case of scarlet fever was recorded during the first four months of this year; and only 14 in the remaining six towns. No death from small-pox was registered in any of the watering-places dealt with in the accompanying table either in 1889 or during the first four months of the current year.

Watering-Places.	Estimated Population.	Years.	Total Deaths.	Annual Rate per 1,000 living.		Deaths from Principal Zymotic Diseases.	Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Whooping-cough.	Fever.	Diarrhœa.
				Total Deaths.	Principal Zymotic Diseases.								
Seaside Towns.													
Aberystwith	8,500	1889	110	12·9	0·7	6	—	—	—	—	4	1	1
		1890	48	16·9	0·0	—	—	—	—	—	—	—	—
Blackpool	23,000	1889	406	17·7	1·8	42	—	2	1	12	8	8	11
		1890	150	19·6	2·3	18	—	8	3	6	1	—	—
Bognor	?	1889	58	(?)	(?)	1	—	—	—	—	—	1	—
		1890	25	(?)	(?)	1	—	—	—	—	1	—	—
Brighton	123,659	1889	1,833	15·1	1·5	183	—	46	18	10	27	18	64
		1890	622	15·1	1·3	55	—	1	3	3	43	2	3
Broadstairs	5,450	1889	77	14·1	1·1	6	—	1	—	—	—	—	5
		1890	23	12·7	1·1	2	—	—	—	—	2	—	—
Dawlish	4,380	1889	(?)	14·5	1·8	8	—	—	—	—	6	2	—
		1890	(?)	17·4	0·7	3	—	—	—	—	3	—	—
Dover	31,483	1889	456	14·5	0·4	14	—	1	1	—	2	—	10
		1890	238	22·7	2·9	30	—	26	—	—	3	—	1
Hastings	57,176	1889	711	12·4	0·6	36	—	6	—	6	5	3	16
		1890	279	14·6	0·5	10	—	—	1	3	5	—	1
Herne Bay	3,548	1889	46	13·0	0·8	3	—	—	—	—	—	—	3
		1890	12	10·1	1·7	2	—	—	—	—	2	—	—
Ilfracombe	7,550	1889	109	14·4	0·7	5	—	1	—	—	2	—	2
		1890	43	17·1	2·8	7	—	1	—	—	6	—	—
Littlehampton	4,300	1889	65	15·1	0·7	3	—	1	—	1	—	—	1
		1890	13	9·1	0·0	—	—	—	—	—	—	—	—
Lowestoft	23,890	1889	350	14·9	1·4	33	—	6	—	—	10	4	13
		1890	159	20·0	1·6	13	—	2	1	—	6	3	2
Penzance	13,100	1889	224	17·1	0·7	9	—	1	1	—	—	—	7
		1890	64	14·7	0·0	—	—	—	—	—	—	—	—
Rhyl	6,547	1889	107	16·3	0·9	6	—	—	—	1	—	1	4
		1890	43	19·7	0·5	1	—	—	—	—	1	—	—
Sandown	3,450	1889	44	12·8	1·2	4	—	—	—	—	—	2	2
		1890	10	8·7	0·0	—	—	—	—	—	—	—	—
Scarborough	36,200	1889	...	...	...	...	...	...	...	...	...	...	...
		1890	183	15·2	-0·5	6	—	—	—	3	3	—	—
Shanklin	4,500	1889	47	10·4	(?)	(?)	—	7	—	—	(?)	2	—
		1890	8	8·0	2·0	2	—	2	—	—	—	—	—
Sidmouth	4,000	1889	59	15·0	0·3	1	—	—	—	—	—	1	—
		1890	20	15·0	0·0	—	—	—	—	—	—	—	—
Southport	41,585	1889	706	17·0	1·3	53	—	4	4	18	18	1	8
		1890	267	19·3	1·2	17	—	—	4	9	3	—	1
Torquay	25,000	1889	370	14·8	0·3	7	—	2	1	—	—	1	3
		1890	200	24·0	0·7	6	—	1	—	—	5	—	—
Weston-super-Mare	18,000	1889	(?)	(?)	0·8	15	—	—	—	—	4	2	9
		1890	(?)	(?)	0·3	2	—	—	—	—	2	—	—
Weymouth	14,189	1889	230	16·2	0·8	12	—	—	—	—	—	1	11
		1890	96	20·3	0·6	3	—	—	—	—	2	—	1
Whitby	14,816	1889	...	...	...	...	...	...	...	...	...	...	...
		1890	67	13·6	0·2	1	—	—	—	—	—	1	—
Worthing	14,400	1889	179	12·4	2·8	4	—	—	—	1	1	2	—
		1890	57	11·9	0·6	3	—	—	2	—	—	1	—
Yarmouth	50,272	1889	875	17·4	2·1	106	—	20	—	2	1	25	58
		1890	288	17·2	0·8	14	—	—	—	—	1	10	3
Inland Towns.													
Bath	51,790	1889	(?)	18·2	0·3	17	—	1	—	2	7	7	—
		1890	(?)	23·1	0·8	14	—	1	—	1	12	—	—
Cheltenham	48,000	1889	733	15·3	0·6	30	—	—	—	2	8	7	13
		1890	309	19·3	0·6	9	—	—	—	3	2	1	3
Clifton	31,039	1889	372	12·0	1·2	36	—	7	1	2	13	5	8
		1890	176	17·0	1·6	17	—	—	—	—	13	1	3
Malvern	7,000	1889	71	10·1	0·3	2	—	1	—	—	—	—	1
		1890	44	18·9	1·7	4	—	—	—	—	3	—	1
Matlock	4,690	1889	69	14·7	0·9	4	—	—	4	—	—	—	—
		1890	30	19·2	1·9	3	—	1	1	—	—	1	—
Tunbridge Wells	28,184	1889	372	13·2	0·5	14	—	5	2	3	1	1	2
		1890	103	11·0	0·3	3	—	—	—	1	2	—	—

THE annual meeting of the District Council of the Plumbers' Company was held in the Hull Town Hall, when the Mayor (the President) presided. The mayor was unanimously re-elected president for the ensuing year, and Mr. T. B. Holmes vice-president. Several new members were added to the Council and Registration Committee. Votes of thanks were passed to the president, the hon. treasurer (Mr. A. E. White, C.E.), and the secretary. The secretary reported the receipt of several certificates, and it was decided to distribute them at the next committee meeting. Councillor C. Richardson was unanimously elected chairman of the Registration Committee and Councillor Cohen deputy-chairman.

COST OF THE INFLUENZA AMONG LABOURERS.—The outbreak of influenza among the labourers of Kent has cost the Labourers' Union in sick pay at a rate of £600 a week for four or five weeks.

THE DRAINAGE OF MELBOURNE.—There has been great complaint lately of the insanitary state of Melbourne, resulting in the serious prevalence of typhoid fever, and it has been decided to amend the drainage, the Council having decided on the adoption of a system for the removal of night-soil in air-tight pans, and destroying it by means of dessicators, the works for which will be constructed on the West Melbourne swamp. The cost of the system will be £60,000.

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CORNISH HEALTH RESORTS.

By Emma Brewer.

There is no county in England richer in healthful and beautiful spots than Cornwall. The one most known and taken advantage of is Penzance, and rightly so, for combined with the necessities for invalid life there is an extraordinary richness, variety and beauty in the country around for the enjoyment of those who accompany the invalid.

Penzance.

The advantages to the delicate in health offered by Penzance, the Mentone of England, arise in a great measure from the prevalence of south and south-west winds, and its nearness to the great Atlantic. These influences so temper the atmosphere that it is always soft and mild in winter, and cool in summer, and the difference of temperature between day and night is in consequence so small as scarcely to be noticeable. There is hardly a day in the year without sun, and therefore the invalid is able to enjoy a great deal more out-door life than in other parts of England. For aged invalids who generally like a soft climate, and with whom a moderate degree of humidity agrees, Penzance is suitable all the year round.

The summer is never sultry, and the rigour of winter is so tempered that thick ice is rarely seen, and snowstorms exhaust themselves before reaching this spot; or, if venturing so far, are at once dissolved by the warm breezes which play round the shores of Cornwall.

On entering Penzance the visitor is at once struck with the salubrity and mildness of the atmosphere, and to confirm this view one has only to look at the healthy growth of the myrtle outside the houses, the immense size of the hydrangeas in the shrubberies, the blossoming of the camelias in the open air, and the constant greenness of the meadows. A medical man speaking of the myrtles, says, "I find that they attain a height of 10 to 12 feet in the open air, and that they are trained on the fronts of houses in Penzance to double that height." A sufficient quantity of cuttings was obtained in six weeks from a tree of this description covering one of the houses, to supply the oven with fuel for three months. Vegetation is very little checked in the winter, and it is not at all unusual to have new potatoes raised in the open gardens during January and February with no shelter during the coldest nights, except that afforded by a little matting. Strawberries and apples are good and abundant, but not so grapes and wall fruit, which require a higher temperature during the summer months than obtains in Penzance.

The promenade of half a mile along the sea in front of the Queen's Hotel is of great value to the invalid—it is always sunny, cheerful, and well-paved. At the west end of the promenade stand the baths. There are hotels and lodging-houses of every kind, some of them exceedingly good. Of the hotels the Queen's is the largest and most conspicuous. It is admirably managed, and a fact of too great value to the sick to be passed over is that Miss Terry, the lady manageress, is one of the gentlest and kindest of women. The best furnished lodgings are to be obtained in the Alexandria, Marina, Cornwall, Morrab and Regent terraces, and in the Morrab Road. The Morrab Gardens are prettily laid out, and furnish an admirable promenade. Several privileges are accorded to visitors, such as access to the reading-room of the Penzance Institute, and the debating, billiard, and tennis clubs.

There is also a little fresh-water and plenty of sea-fishing; the last should not be undertaken, however, without the company of a boatman who knows the coast well. Best of all are the lovely walks and drives, many of them within easy distance. There are the pretty, peaceful fishing villages of Newlyn and Mousehole; Land's End with its bold scenery, and the Logan Stone, a huge block of granite, balancing itself in such a way that the least touch is enough to set it rocking. Then, too, there is the walk to Marazion, where the Jews once held *tin* markets; they called it Mara-Zion or *bitter* Zion. There is also St. Michael's Mount and St. Ives, and it is quite possible to get to the Lizard and back in a day. Last, not least, there are the beautiful Scilly Isles, the land of flowers, described in the Sanitary Record of May 15, which can be reached by a voyage of three hours and a half.

Food, milk, and water are all good in Penzance. It is the last post town in England, and there are three deliveries on week days, and one on Sundays.

The last returns show the population of Penzance to be 12,800, the deaths 710, and the births 446.

A very good train leaves Paddington at a quarter to twelve every day, and arrives at Penzance at nine in the evening. In the case of delicate people seeking restoration of health, it is always wise to write beforehand and secure rooms, and order a meal to be in readiness on arrival. It makes all the difference in the world to the tourist to secure comfort at the outset of a holiday.

A ridge of hills runs through Cornwall, forming a sort of backbone, which strengthens the narrow land on either side to bear the weight of the sea. It is on the south side of this ridge, about twenty miles west of Plymouth, that the visitor finds two of the quaintest and most charming little coast towns, known by the names of Looe and Polperro.

Looe and Polperro.

Anyone wanting a holiday free of crowds and nigger bands, where rest without dulness may be found, should take the train to Menheniot, the station before Liskeard. On arriving, the traveller will find an omnibus going to Looe, a distance of seven miles through the most lovely scenery, for one shilling, or, if something better be desired, a letter to the Looe Hotel will bring a waggonette to meet the train, of which the cost will be six shillings only.

The visitor to Looe will be struck with its quaintness and unlikeness to any place he has seen in England, and will certainly fancy that his imagination has played him a trick, and that he is far away on the other side of the Channel.

The charming and picturesque river Looe, as it runs into the sea between steep hills, accommodates, or rather squeezes in, a little town on each bank called respectively East Looe and West Looe, according to the side of the river on which it stands. Each of these townlets, divided only by the river, has its own little ways, its peculiarities, and its special attractions, as much as though they were miles apart.

The sloping hills on either side are covered with woods and gardens and dotted about with houses like eagles' nests, and these, together with the narrow, tortuous streets and the curious little houses, make a wonderfully pretty picture. In fact, both the Looes are delightful for a holiday; they are healthy, the air is beautiful, the sky clear, the sea fine and open, and it would be difficult to parallel the walks and drives anywhere.

The drive or walk to Hessenford brings the explorer to the most perfect little hamlet, whence to

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Down Derry by the sea, and over the cliffs back to Looe, cannot fail to give the utmost pleasure. If one is tired on reaching Down Derry, there is a farm-house where a good tea, including Cornish cream, may be had. It is a place for the sick and well, for the old and young, in which to spend a holiday. There are enjoyments for them all; rocks where one can sit and read or while away the time; a good beach of sand and pebbles, where wonderful shells are picked up by the children; and good boating, fishing, and bathing. Every morning brings in the fishing boats, and it is a never-ceasing amusement to watch them unload.

Fresh farm and dairy produce are brought into the little towns every day, and they are not only excellent, but cheap.

Good lodgings can be had in either of the two Looes for about a guinea or twenty-five shillings a week, and there are two unpretending but clean and comfortable hotels in East Looe. The best for situation is the Looe Hotel; it is very clean, and the cooking good, and the visitor can be boarded and lodged for about thirty shillings a week. The Ship Hotel is also very clean and reasonable.

The water is exceedingly good, and the place is so healthy that the people as a rule die of good old age.

The men are mostly fishermen, and the women and girls employ their spare time in knitting.

There are several gentlemen's seats in the vicinity, and each of the Looes has its church, chapels, and schools, of which the good influences are very evident.

East Looe has the convenience of being lighted with gas.

Polperro.

As to Polperro, which is three miles farther west, it is a perfect paradise to the artist, and a source of delight to the visitor. High hills, abrupt and rugged, shut in a deep and winding valley into which houses seem to have been dropped rather than built, placed as they are not only in the valley, but on its rocky ledges. Through the narrow quaint streets runs a sparkling rapid brook on towards the sea, altogether anything more picturesque and charming than this little town could not be found from John o' Groats to Land's End. From its isolation Polperro has been slow to be affected by the changes in manners and customs which have marked the world outside it, and to go and live there is like travelling back a couple of centuries. The quay is very old indeed, and the auction mart or *fish scales* is worth a visit; a busy group of fishermen, clad in Guernsey frocks, sou' westers, and sea boots, are here to be seen bargaining by a sort of auction with travelling fishmongers for the sale of the fish.

Polperro is an extremely healthy place, indeed it can scarcely fail to be otherwise. There is very little sickness and no consumption. There is no resident doctor, but the telegraph will bring one over from Looe in less than an hour.

There are two hotels. The Ship is homely but spotlessly clean, the food good, and the landlady is one of the kindest of women; which is a great advantage to delicate people. For one person the charge for board and lodging is thirty shillings a week, but for two or more together twenty-five shillings each. The "Tourist Hotel" is more pretentious than the Ship. There are a few very good lodgings in the high part of the town for about a guinea a week.

In the case of delicate people going for a holiday to Polperro a pioneer should go first and select the lodging and see that all is in readiness. People in health, however, can rough it a little, and to them Polperro will prove a perfect paradise.

Visitors to Polperro should get out at Menheniot, having first written to one of the hotels for a carriage to meet them; the distance is about the same as to Looe, and the price the same. No omnibus plies at present between Menheniot and Polperro.

It may be mentioned that the landlord of the Ship has built a studio in his garden for the use of artists.

The population is about 1,400, and farm-house produce is very good and abundant.

Durban Waterworks.—Mr. W. H. Radford, civil engineer, Nottingham, has been appointed representative and consulting engineer in England for the Corporation of Durban in South Africa. He will act conjointly with the London agents, in ordering and testing the materials required for the Waterworks extension. The cost of the new works when finally completed will be about £120,000.

Intending visitors to Scarborough will be confirmed in their choice of that health resort by the very satisfactory account which Dr. Taylor is able to give of its sanitary condition at the end of the first quarter of the present year. Only 5 deaths from zymotic disease (3 of which were from diphtheria) occurred during the first three weeks of the year. The mortality during March was extremely favourable, being at the rate of 13·3 per 1,000.

The Dangers of Dirt-Pies.—Our lively little contemporary *Baby* points out that the widespread custom among children of making dirt-pies, shovelling about the dry earth, making gardens with sticks, &c., is one presenting a hygienic danger. Whooping-cough and measles may be transmitted to children who thus make dirt-pies in gardens and parks, where crowds of other children play. Recent researches made by MM. Malassez and Vignal have shown that sputa from tuberculous patients treated in the same way as sputa that have fallen on the ground contain the bacillus of tuberculosis, retaining its vitality and virulence. These scientists have dried, pulverized, and then moistened tuberculous sputa, and have found the bacillus in the sputa thus treated many times. This treatment is precisely the same as that of all *detritus* which falls to the ground; it becomes desiccated by the action of the air, pulverized by being constantly trodden on, and again moistened by rain. Children with their spades and pails put in motion the dust, which may be laden with germs of transmissible illnesses—especially such as whooping-cough, measles, &c., and swallow them by inhalation. During convalescence from these illnesses, children are taken out naturally. Sheltered sunny gardens are preferred to streets. Whilst out for their outing the children are sure to have one or more fits of coughing, accompanied by sickness, and the ground thus becomes a hot-bed of contagion of whooping-cough, rendered more dangerous by the juvenile love of making dirt-pies, and the passion for scraping and playing with the ground. The authors of the experiments alluded to strictly forbid their children the pleasure of making dirt-pies; spades, rakes, and pails, are sternly refused, but replaced by a large supply of harmless bats and balls, shuttlecocks and battledores. By the sea-side, spades and pails can be used without fear of danger, and as many sand-pies made as the little workers can desire; for in that case the tide comes in, and with it there is a general cleansing; likewise the sand is generally wet or moistened, its particles are thus prevented from flying about, and the vehicle of contagion, should there be any, is not inhaled; neither is there such an aggregation of children in a comparatively small space, as that which takes place daily in gardens and parks frequented by children.

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THE

SANITARY RECORD.

The Organ of the Association of Public Sanitary Inspectors of Great Britain, and of the National Association of Sanitary Inspectors.

JUNE 16, 1890.

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The Editor will be glad to receive, for publication, announcements of meetings, reports of proceedings, and abstracts or originals of papers read at meetings of Medical Societies of Health, Public Analysts, and Sanitary Inspectors' Associations, &c.

Medical Officers of Health, Public Analysts, Town Clerks, Local Board Clerks, Sanitary Surveyors, and Inspectors, are requested to send Notices of Appointments and Vacancies to the Editor, care of Messrs. W. H. ALLEN & Co., 13 *Waterloo Place. S.W.*

Should any of our readers require information relative to the taking out of patents for inventions, either English or foreign, the "Patent Correspondent" of the SANITARY RECORD *will be pleased to give them the benefit of his experience and assistance. Communications to be addressed,* Patent Correspondent, SANITARY RECORD Office, 13 Waterloo Place. S.W.

THE SANITARY RECORD will in future be published by Messrs. W. H. ALLEN & Co., 13 Waterloo Place. S.W. All matters relating to the literary portion of the Journal, and all exchange journals, periodicals, books for review, and new inventions, should be addressed to the EDITOR at above address. All business communications relating to Advertisements, Subscriptions, &c., to be addressed to the MANAGER at the same address.

SCOTCH COUNTY COUNCILS AND PUBLIC HEALTH.

A SOMEWHAT serious difficulty has arisen in regard to the appointment of medical officers of health and sanitary inspectors under the Local Government (Scotland) Act. The great majority of the county councils have determined to make no appointment until it is seen whether the Board of Supervision take any action with respect to the present medical officers and sanitary inspectors. A sanitary inspector in Scotland is only removable with the consent of the Board of Supervision, and the medical officers of health having been taken over on May 15 by the county councils come under the regulations of the Local Government Act, and cannot be dismissed without the consent of the central board. Some of the county councils have made an attempt to clear the way by asking the parochial boards (who had the control of public health) to dismiss such officers previous to their being taken over by the county councils.

As regards the medical officers, this course seems to be quite legal, and in many cases the medical officers of health have acquiesced. In some cases, however, the parochial boards have refused to accede to the request of the county councils. The sanitary inspectors are, however, in a different position, and they naturally have rebelled against this summary dismissal. In Stirlingshire, for example, some of the sanitary inspectors have written to the clerk of the county council, informing him that the council have no power to dismiss them, and that they will not demit office without the express request of the Board of Supervision. The Board of Supervision on the other hand refuse to sanction the dismissal of any of these officers, but state that the county council might distribute the business among existing officers as it thought just, or abolish any office which it deems unnecessary, the officer receiving the usual compensation.

It seems to us that the best solution of the difficulty would be to retain the present sanitary inspectors, many of whom have shown great ability and tact in the discharge of their thankless duties, and appoint over them district sanitary inspectors if the district be large enough in population and area, or if not large enough, to appoint a county sanitary inspector, to whom the present officials would be responsible.

With respect to the medical officers of health, the same course might be followed, viz. that a medical officer of health should be appointed for each county, who should in the meantime supervise the work of the present parochial medical officers, and perform also the district duties in localities where there was no medical officer of health.

In most counties the retention of existing officials would not add much to the rates; and although in time these medical officers would either resign or be dismissed with compensation, yet in the more populous areas their retention as district medical officers would be almost a necessity.

We are much afraid, however, that until some remedial legislation is attempted there is little chance of many of the appointments being made, and it is to be hoped, for the furtherance of sanitary work, that this legislation will not be long delayed.

BROMPTON CEMETERY.

IT is probable that the long controversy as to Brompton Cemetery will be terminated this year. In the meantime, it is satisfactory to note that burials in the catacombs will be discontinued, as also in a circle 40 feet wide round the whole area. Even children will not be interred upon that area.

The Government, in reply to various questions put to them, maintain that the cemetery is not detrimental to the health of the surrounding inhabitants, and that there is still available space for common interments for at least two or three years, and in private and select ground for an indefinite period. However this may be, the continuance of the cemetery is a violation of the Act providing for extra-mural interments. The London County Council, in taking up the question of closing the cemetery, recommended in May last year that it should be closed and transferred to the council as an open space, and moreover instructed the Sanitary and Special Purposes Committee to consider and report upon the subject. Mr. Shirley Murphy thereupon inspected the cemetery, and from his report we learn that the first interment took place in June 1840, and up to June 1889 some 155,000 bodies have been interred, including the bodies of about 10,000 still-born children. The average number of interments per annum appears to be 4,000, of which 70 per cent. are in the common ground.

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It is known, of course, that the cemetery is the property of the Government, and is under the management of Her Majesty's Office of Works. In the Municipal Bill of Sir William Harcourt in 1884 there was a provision to the effect that it should be handed over to the new municipality, and it is hoped the Government will hand it over this year to the council. The cemetery is exempted at present from the provisions of section 2 of the Act to amend the laws concerning the burial of the dead in the metropolis, which was passed in 1852. This section authorizes Her Majesty in Council to order the closure, in whole or in part, of burial grounds in the metropolis, but is subject to regulations by the Home Secretary.

Brompton Cemetery is situated in the parish of Kensington, and is bounded by the Richmond Road on the north, and extends nearly to the Fulham Road on the south. The West London Junction Railway is on the west, and beyond this the Lillie Bridge grounds, the ground of the western district hospital, and the Stamford Bridge Athletic Ground. On the east are the gardens of houses situated in the Finborough and Ifield Roads. On the north side the houses are only separated from the cemetery by the width of the Richmond Road; on the east only by gardens some thirty feet or more long, and on the south by gardens or yards 10 feet long and upwards.

The total area of the ground is 38 acres odd, of which 6 acres are used for roads and buildings, leaving rather under 32 acres for burial purposes. The ground is mostly sandy gravel. Burials take place in (1) catacombs, (2) select ground, (3) private ground, and (4) common ground. The catacombs have been very little used of late, and their use is now to be discontinued. The last interment in a catacomb took place in April last year. It is stated that there is room in these catacombs for an indefinite period.

Four acres are devoted to select ground, of which only two acres have so far been used. This ground is situated along the central portion of the eastern boundary and along both sides of the central avenue. Brick graves with leaden coffins were until recently only allowed in this ground, but earthen graves during the last six or seven years have been made when desired. It cannot be estimated how soon this ground may be filled, for in two acres so far untouched 2,000 graves can be made. The private ground for family graves is situated on the east side of the ground. No grave of this class is allowed to hold more than seven adult bodies. Two children under ten years of age are considered as one adult. These graves have an average of four and a half bodies. In the case of these graves, again, it is impossible to estimate how long it will take to fill them. The common ground, situated on the western portion of the cemetery, has no virgin soil left, but there is said to be room for about 9,000 bodies more. Successive interments in the same private grave within ten years in the case of adults and five in the case of children under ten years of age are not permitted unless they are members of the same family, and then a foot of earth is left between each coffin. Fourteen years was formerly the interval which took place between successive burials of adults in common graves, which are earthen. Some twenty years ago this interval was reduced to ten, and ten years ago the order was further modified by permission being given for common graves to be filled up at once with bodies, a foot of earth intervening between each coffin.

The foregoing facts speak for themselves, and however much space the authorities may say they have for further interments, we think, in view of the enormous population now living around the cemetery, that it should be closed in the interests of the welfare of the community. The Kensington Vestry are in favour of the cemetery being closed as soon as practicable, and further action will shortly be taken in the House of Commons.

FACTORY SMOKE.

THE meeting recently held under the presidency of the Lord Mayor, which we report on page 604, was distinguished by a very pronounced conflict of opinion. The representatives of the Manchester Smoke Abatement party, who promoted the meeting, and their chief spokesman, Lord Derby, held it to be needful to make further tests of smoke-preventing appliances for the information and guidance of factory owners, who are supposed to be in a state of complete ignorance as to the possibility of preventing smoke. The representatives of the Smoke Abatement Institution, on the other hand, took the opposite view, and urged that, the methods of preventing smoke being already widely understood and largely applied, the existing law in restraint of smoke should be rigorously enforced against the owners of all offending factory chimneys. This was the issue raised between the parties; and the balance of authority assuredly lies with the representatives of the Smoke Abatement Institution. Not only have they had a good many years experience of the practical value of testing apparatus, but they have had also the aid of numerous specially qualified investigators working over the whole field of inquiry to guide them in forming a sound judgment on the question. Moreover, they can point, as Mr. Ernest Hart reminded the meeting, to London itself as a conspicuous example of what may be accomplished by even a very moderate measure of compulsion.

The arguments by which Lord Derby endeavoured to support the scheme for more testing were singularly lacking in that logical cogency and precision of thought which generally characterise his lordships utterances. If, as he, no doubt rightly, said, "nine-tenths of the factory smoke is absolutely unnecessary and preventible," and the law definitely prohibits it, why should it not be prevented? Why should the public be asked to subscribe funds for carrying out a costly series of experiments to prove what has already been proved? Why, as Professor Roberts-Austen asked with much force, should the operations of the law and the efforts of factory owners be practically suspended for a year or two pending a further report, when the reports already issued by the Smoke Abatement Institution are to a great extent unheeded?

We look in vain to the speeches of Lord Derby and those he represents for any reply to these obvious inquiries. According to his lordship, smoke is not only preventible, but its prevention is profitable. While fully agreeing with him as to public indifference being at the root of the evil, and there being need for much strengthened public opinion, we entirely reject the idea that the interest of the public is likely to be materially stimulated by a further series of tests of industrial furnaces and the publication of reports thereon. Such reports must, in the very nature of them, be highly technical, and, for that reason, they appeal to only a very limited class of readers. It is

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quite true that there are a vast number of manufacturers who have a vital interest in the subject from an economic point of view, but it is not to be reasonably assumed for a moment that they will, to any appreciable extent, be any more influenced by reports in the future than they have been in the past. At the best, such a series of tests as the Manchester party propose could not be expected to do more than show that a greater or less economy attaches to the use of certain furnaces and systems of firing. And when it is remembered that the actual conditions of the use of furnaces differ enormously, that in fact there are comparatively few manufactories which are strictly comparable with each other in respect of their working conditions, it will be at once recognized that such tests cannot possess more than a very limited value as practical guides to individual manufacturers.

This criticism by no means implies the least hostility to any or every well-devised and systematic endeavour to increase knowledge of the uses of fuel or to assist the development of inventive effort. But what is seriously deprecated in the present Manchester movement is the endeavour to treat the prevention of smoke as still problematical and to create the belief that the proposed testing is required in order to bring the smoke of the factories of Lancashire and elsewhere under restraint.

The facts cannot be questioned that factory smoke is preventible, and that it is being prevented wherever the law against it is operative. All who desire to aid the cause of smoke prevention must take their stand upon this basis. Lord Derby's allusion to the difficulties experienced in the introduction of railways, canals, &c., was, as illustrative allusions frequently are, more damaging than serviceable to the argument which it was designed to support. The changes he referred to would not have been practicable but for the intervention of the law. A certain number of persons were in favour of those changes, they were proved to be practicable, and then the law rendered them compulsory. Similarly, a certain, and, it may be safely said, a very large, number of persons are in favour of the abolition of smoke, and all reasoning and experience confirms the belief that it, like the changes referred to, can be effected only by compulsion.

Beyond the particular and ineradicable objections to the Manchester scheme which have been pointed out, various suggestions and assertions were made by the Mayor of Rochdale and some of the other speakers at the Mansion House, on which we purpose commenting at an early opportunity. The suggestions and assertions referred to are typical of those which commonly pass from mouth to mouth without the least consideration or inquiry, and which are mainly responsible for the continuance of smoke from factories as well as all other sources.

ACCORDING to a return issued in fulfilment of the terms of the Vaccination Acts, the number of persons in England and Wales who have, since the last day of July 1879, been fined or imprisoned for non-compliance with the provisions of the Acts relating to the vaccination of children amounts respectively to 10,660 and 113. Of the total fines, 75 were inflicted on recalcitrant Welshmen, who in no single instance carried their contumacy to the extent of courting imprisonment in support of their disposition to evade an objectionable law. The number of Englishmen who underwent imprisonment in proof of their objection to an obnoxious statute was 113, of whom only 1 was committed for a period exceeding 14 days. The chief objectors are to be found in the manufacturing and mining districts.

NOTES OF THE MONTH.

"JERRY-BUILT" PROPERTY IN BIRMINGHAM.

"IT is not only old and neglected properties that are unfit for human habitation," writes Dr. Alfred Hill in his last annual report on the health of Birmingham. "The jerry-builder, if not carefully looked after, will put up structures which, though presenting a decent appearance to superficial observers, are totally unfit for occupation from a sanitary point of view. They may be built on an impure foundation with mortar consisting of dirt instead of sand, and only enough lime to 'swear by'; while the drains in too many instances are 'a delusion and a snare.' A sample of mortar which I took from some property in Springfield Street and analysed, contained only one part of lime to twenty-four parts, not of sand, but of dirt, apparently surface sweepings possibly containing every kind of objectionable animal impurity. About three months ago the city surveyor took action against a builder of eight houses in St. Andrew's Road, in which a mixture of very little lime with a great deal of dirt consisting of surface sweepings, and containing coal dust, brick dust, fine wood shavings, road detritus, and other miscellaneous rubbish was made to do duty for mortar. The case was the subject of a prosecution, and the builder was ordered to pay a fine of £5 and costs. The buildings are still unfinished, so that the object of preventing their habitation has been so far attained, although the houses have not been taken down. Other property in Coventry Road, though new and appearing of fair quality to the superficial observer, is an excellent type of the 'jerry' order. It is constructed of flimsy and bad material with inferior workmanship, and as a result is prematurely falling to ruin. My attention was called to it by the tenant, who alleged that illness had existed in the family ever since they occupied it. Some of the walls and floors were wet, partly from the dampness of the soil and partly from a water-pipe having burst some time ago, before the present tenancy commenced. I could discover no damp course. On the walls was a fungus a couple of feet in length, the largest I have ever seen, and the pantry and cellar were pervaded by a strong musty odour. The next house, which is vacant, is in precisely the same condition. The ventilating pipe of the water-closet consisted of zinc socketed upon the lead soil-pipe without jointing of any kind."

THE DANGERS OF INTERMITTENT WATER SUPPLIES.

MR. A. WYNTER BLYTH'S "Sanitary Chronicles" for the parish of St. Marylebone, for the month of February last, deals at some length with an epidemic of typhoid fever at Alma Square, which derives its interest neither from the number of cases nor from any unusual fatality; but because the causes to which it has been traced are of a distinctly preventable character, and the lessons the little history teach are of interest to every local administrative unit in the metropolis, and to every household connected with the public sewer and receiving the public water supply.

Seven households were affected, and there was one death. All the households were similar as regards their locality, their general structure, their sewerage, and their water supply. They were dissimilar as regards their milk and food supplies.

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There was ample evidence that something from time to time occurred to deteriorate the water, and at least two of the occupiers had applied to the West Middlesex Water Company complaining of it. Mr. Blyth made minute inquiries into the matter, and eventually the water main was laid bare opposite each house, and the ferrules examined. A serious state of things was thus disclosed. With few exceptions the pipes branching from the main were either wholly of iron, or partly of iron and partly of lead, and the ferrules in four instances were defective, leaking when there was pressure of the water. In one of the four, the ferrule was cracked through two-thirds of its circumference.

A later inspection resulted in the discovery that one of the iron service-pipes was so corroded as to have produced an aperture. The sewage pipes of all the houses affected began as dead-ends, and the fall in each case was defective. The presence of the dead-ends had caused complaints from time to time of offensive odours. The sewer on examination was found to have some deposit in it, and a good deal of sewage was found to have escaped into the earth around the pipes. The water supply in the locality was intermittent, and there can be little doubt that from time to time actual sewage had been sucked into the main and distributed erratically—now to this house, now to that. From the correspondence which ensued, it would almost seem as if the officers of the Water Company are really not aware of the serious danger to health rendered possible by small leaks in the supply pipes and connections. The notion is widely prevalent, even among engineers, that a pipe full of water at great pressure cannot suck in, if defective, any liquid surrounding the pipe—a grave error, which can be readily disproved by experiment.

Mr. Blyth therefore suggests to the Sanitary Committee of his parish the desirability of recommending the vestry:—(1.) to require the Water Company to extend the area of constant supply to the whole parish; (2.) to suggest an amendment in the law, whereby the water companies would be compelled to see that, in the first place, proper lead service pipes are laid from the main, and to inspect, at least once every five years, those portions which, being under the ground, are out of sight.

WORK AMONGST THE JEWISH POOR.

THE work of the Board of Guardians for the Relief of the Jewish Poor is already well known as an important factor in advancing sanitary reform in East London; and the report of this Board for the year 1889 shows that their work continues to increase. The labours of sanitary inspectors are proverbially heavy, and many of the delays which occur in effecting improvements must be attributed to this cause. At the same time, the list of defects enumerated in this report only shows too plainly the necessity which unfortunately still exists for the action of such a body as that referred to. Thus, in the City of London itself, on an estate belonging to a most important charitable foundation, two back-to-back houses were visited, in which the "water-closets," situated in a dark and confined space, were wholly unprovided with flushing apparatus of any kind, the gulleys under the standpipes supplying the drinking water were merely holes leading direct to the drain (bell-traps having been provided, but the covers of these traps being, as usual, missing); and the dust and refuse were kept under the staircase. In Whitechapel (although the local authority of this district is certainly far from being less active than its neighbours) the inspector found in Duncan Street, where most of the back erections are used as tailors' workshops, that the sewage could actually be seen, through crevices in the flags, flowing under the surface of the yards. Speaking generally, it may be said that considerably more than one-half of the houses inspected exhibited insanitary conditions, frequently of a serious nature. It was found that the habit of repairing defects in an insufficient manner, with the result that the houses are within a short time again defective, still continues. Thus in Whitechapel 17 houses repaired in 1889 were, before the end of that year, again discovered to be in a defective condition, and the same was the case with four houses in St. George's and with two in Bethnal Green and in Mile End. It is needless to dwell upon the possibilities of disease opened up by conditions such as the following:—"In Whitechapel two water-closets were found which, as our inspector was informed, had been wholly stopped for 30 and 10 days respectively prior to his visit, and he came across drains which had remained choked for 60, 42, and 36 days respectively. In Bethnal Green two closets had been stopped for 21 and one for 14 days before our inspector's visit; one drain (serving five different houses) had been choked for 21 and another for 14 days. In St. George's one water-closet had been allowed to remain in an obstructed condition for three weeks, while in another case a drain inside a dwelling was found to have been for some time uncovered, so that its contents were in direct communication with the air of the house; and this condition of things remained unaltered for no less than five weeks after the attention of the sanitary inspector of the district had been called to the matter." The question of dust collection is one of obvious importance in the confined areas with which this committee has to deal; in Bethnal Green there was but one instance in which an improper accumulation of dust and refuse was observed. Similar accumulations were discovered in 94 cases in Mile End, and in no less than 302 instances in St. George's-in-the-East, and in Whitechapel 334. The introduction of the pail system in Whitechapel seems to be at length making progress; but the public dustbin in Montague Place still causes a great nuisance. In St. George's the dust-pails are usually emptied only once a week; in very many cases this is insufficient, and large accumulations are created. In Mile End it is to be observed that some old houses in Nottingham Place have been reconstructed with dust-shoots ingeniously arranged in such a manner as to convey into these houses the offensive and injurious emanations arising from their unsavoury contents. On the whole, however, more prompt attention is now paid to the complaints of the committee than was formerly the case: although, as Mr. David Schloss, the honorary secretary, remarks, "It will no doubt require many years of patient endeavour to effect anything approaching to a complete remedy of the evil sanitary conditions present in a very large number of the houses occupied by the Jewish poor."

A RAILWAY COMPANY DISCOMFITED.

ONE of the finest features in the great thoroughfare called in its various divisions Marylebone Road, Euston Road, Pentonville Road, and City Road, is the garden of Euston Square, but it is probable that

only a very small number of those who pass up and down that thoroughfare know that the square is threatened with annihilation. In their bill for this session, the London and North-Western Railway Company sought powers to enlarge their terminus, to bring it forward to Euston Road, and thereby to cover ¾ acre of public thoroughfares and 1¼ acre of gardens. With this intent the Directors have been buying up the leases of the houses in Euston Square and the freehold of the enclosure itself, so that they have become possessed of nearly all the rights therein; and it was probably as unexpected as it was unpleasant to them to meet with successful opposition. The Metropolitan Public Gardens Association petitioned against the Bill, but their petition was disallowed on the score of their having no *locus standi*. The London County Council and the St. Pancras Vestry then petitioned, and the chairman and secretary of the Association gave evidence against the Bill before the Committee of the House of Commons, and it was decided that if the Company took the western half of the square as they desired, they must provide another open space in the district equal in value and area. The Company so strongly objected to this condition that they abandoned for this session the portion of the Bill dealing with the terminus. The advocates of fresh air have gained no small victory, for it is not as though the gardens were public property or available for public use, (though they were originally laid out with public money under Lady Southampton's Paving Act,) but they are actually the private property of that Company whose desire to use them was frustrated by Parliament. Thus the precedent laid down last year in the case of the Midland Railway and the St. Pancras churchyard has been established. If the western part of Euston Square is allowed to go, the eastern part will soon follow, and as a fresh attempt will probably be made next year by the defeated parties, it is to be hoped that renewed opposition may lead to renewed success.

SANITARY DWELLINGS AND IMPROVED HEALTH.

Dr. Hope, medical officer of health for Liverpool, in a recent address on this subject, delivered before the North-Western Branch of the Society of Medical Officers of Health, referred to the fact that during the last ten years some 2,000 insanitary houses had been demolished in Liverpool, and the corporation had at the present time some 600 more in hand for present demolition. The mortality in the new dwellings was about half what it was in the old, and whatever other influences might have contributed to this result, there could be no doubt that the removal from wretched and miserable hovels to light and airy dwellings, in which every facility for personal and domestic cleanliness was at hand, had been the main factor in effecting the change.

A SEWERAGE DIFFICULTY AT OLDBURY.

It is a singular fact that whilst the Wolverhampton Corporation have had an order of sequestration granted against them, at the suit of a neighbouring landowner, for wilful disobedience of an order of the Court of Queen's Bench to restrain them from discharging the effluent water from their sewage works into the Pendeford brook-course (*see* Sanitary Record May 15, page 506), the Birmingham Corporation, on the other hand, appear as the promoters of a suit against a neighbouring authority for doing precisely the same thing with which the Corporation at Wolverhampton are charged. At West Bromwich County Court, before Judge Griffiths, Mr. Barham (from the office of the Town Clerk of Birmingham) made an application on behalf of the Corporation of Birmingham for an order enforcing penalties amounting to £850 against the Oldbury Local Board of Health for not complying with an order from the Court restraining them from polluting the river Tame (from which the inhabitants of Birmingham obtain a portion of their water supply for domestic purposes). Mr. Barham explained that an order was made against the Oldbury Local Board in that Court in August last restraining them from allowing sewage to flow into the river Tame, and they asked for penalties to be imposed from the date on which the suspension order expired up to the date of the notice for these proceedings, viz. 17 days, at £50 per day. Mr. Shakespeare, solicitor, on behalf of the Oldbury Board, said that the authority were using every means in their power to improve their works for dealing with the sewage. They had already expended £38,000 on sewage works in their district, which comprised a population only of a little over 17,000, and they were now contemplating a further expenditure of £2,000 in the adoption of another process for dealing with the sewage. The Act of Parliament under which these proceedings were taken was never intended, he urged, to apply to local authorities who were doing their best to deal with a very difficult question. Untimately the Judge decided to suspend the order for a further six months, with liberty to the Birmingham Corporation to apply to the Court in the meantime if necessary.

LEAD POISONING BY CIDER.

An interesting outbreak of lead poisoning has recently occurred in the south part of Devon, where cider is the usual beverage among the working-classes. Within the last few months seven men, who generally enjoy the best of health, have from time to time been laid up with severe colic accompanied by blue lines on the gums, and one man at times had convulsions and dyspepsia, attended with a great deal of palpitation and shortness of breath. The possibility of these cases being caused by water impregnated with lead was disproved by chemical analysis and other circumstances; but a noticeable feature in the outbreak is that all these men are the greatest consumers of cider from one public-house in a village, where it is drawn through a lead pipe, and the one who suffered most is the ostler; who has recently taken the situation. Two samples of the cider were sent to the county analyst. One drawn directly from the tap after it had been standing in the lead pipe all night was reported by him to contain 5·74 grains of lead per gallon, whilst the other sample drawn from a cask not connected to the lead pipe contained 3·36 grains of lead per gallon, the lead in both instances being weighed as a sulphate. These samples of cider, therefore, contained a large quantity of lead, which was injurious to health, and there is little doubt but that these men were being affected by it. A curious feature shown by the analysis was that a cask of cider not connected to the lead pipe contained such a large quantity of lead. It is difficult to tell how this metal got into the cider, the only suspicious cause being that the cask had contained cider in the previous year, when it was as usual connected to the lead pipe; but it is stated that the cask had been well

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cleaned out before receiving the new cider. An examination of the pounds where the cider was manufactured was made. These were seven in number, but in only two could there possibly be any fear of lead impregnation, and that was from slate tanks used to hold the "pummy" for 12 hours. The joints of the tanks are secured by red lead, but it is almost impossible for any apple to come in contact with the lead, and an analysis of the cider from the same source, but supplied to another public-house, showed it to be free from lead. It would be interesting to know if lead pipes or slate tanks are used in other cider drinking parts of the country, as lead poisoning often presents obscure and varying symptoms.

MILK AND DIPHTHERIA.

DR. FOX, medical officer for Mid-Cheshire, at a recent meeting of the Altrincham Union Rural Sanitary Authority, said an alarming statement had gone the rounds of the papers to the effect that the principal cause in the spread of diphtheria was either milk or diphtheritic illness in the domestic cat. Both the cow and the cat were thus implicated. Dogs were already muzzled, and now the cat was to be made the subject of Parliamentary inquiry. The statement was made on very high authority indeed, but he was bound to say these alarming statements made on insufficient grounds were very much to be deprecated. It was news to him to learn that milk was the chief cause of diphtheria, and when he read the paragraph he thought that as medical officer of a large milk-producing district, he ought to know something about it. During the 13 years he had held his position there had been 170 deaths from diphtheria, and he had investigated nearly 300 cases. He was bound to say, after the fullest investigation, that not a single case could be attributed to milk as the cause, and neither sufferers, their friends, nor the medical men attributed disease to milk. He thought the cause was neither to be found in milk nor tuberculosis in meat, but in the want of cleanliness in the people.

THE GERM ORIGIN OF RHEUMATISM.

THE theory that rheumatism is due to a specific organism is rapidly gaining ground in certain quarters. With the Americans, perhaps, more than among our own countrymen, the conviction of a germ origin seems to have taken a firm hold. No bacillus has been discovered, and until that event, the exact proof demanded by the scientific mind will be lacking. Failure in that direction, however, need offer no bar to reasonable speculation. Few people would for a moment doubt that scarlet fever is caused by an organism, which, nevertheless, has not yet been demonstrated. It is by the history of the attack, by the occurrence of certain well-marked symptoms, and by comparison with other affections known to depend on bacterial invasion that we are led to adopt a like view as to the origin of scarlatina. The disease has a rapid incubation in the system; the rash appears at a certain period, lasts so many days, and affects particular parts of the body; there is a tendency to attack the throat, the kidneys often suffer, and desquamation follows; but, above all, scarlatina is invariably contracted by contact, direct or indirect, with previous cases. In rheumatism the symptoms are not so well marked, but are still very definite, such as, for instance, the profuse sweating and the joint inflammations. One point insisted on by the advocates of its germ origin is the markedly curative action of antiseptic drugs, to wit, salicin and the salicylates. The important bearing of these investigations on future sanitary measures is almost beyond conjecture. Rheumatism causes an immense amount of death and disablement in a country with a climate like that of Britain, and hence a vast loss is yearly sustained to the national wealth by the ravages of that disease. Should its microbic origin be proved, a mighty weapon will be at once placed in the hands of the sanitarian. The next step, after the discovery of the bacillus, would be to trace its habitat. The disease is notoriously connected with damp in some shape or other. It is possible that the sanitary inspector of the future may be called to cases of rheumatic fever to disinfect the house along with the clothes and bedding of the patient, just as he does now in scarlet fever or in small-pox. The idea may seem far-fetched and extravagant, yet stranger things are constantly being brought about by the swift march of scientific progress.

MORTALITY AMONGST NEEDLE-MAKERS.

FROM the recently-issued report of Mr. G. H. Fosbroke, Medical Officer of Health for Stratford-on-Avon Combined Sanitary District, we gather that of the total death-rate about 7 per cent. of the deaths were due to phthisis, the highest percentage being in the Stratford Urban and Alcester Rural Districts. Mr. Fosbroke thought it would be found that those engaged in the different branches of the needle-manufacturing trade were the chief sufferers. He believed that the needle manufacturers in the district had done all they could to render their factories healthy, but so long as the mechanics did not realise the value of efficient ventilation, so long, he feared, phthisis would dwell among them.

LIFE AND DEATH IN ONE ROOM.

THE whole of Lisson Grove, writes Dr. Blyth, the Medical Officer for Marylebone, and parts of other districts continue to have a high death-rate; this is mainly due to the disproportion borne by working men's incomes to the rent demanded, which forces them to live in one room. It can be shown that the high local death and sickness rates in all towns are closely connected with the cubic space which the people enjoy in their homes, and a one-roomed population invariably has a shorter life than families who can afford to occupy two or more rooms.

THE NEW TOWER FOR LONDON.

THE exhibition from April 29 to May 9 of designs for the great Tower in London at the Hall of the Drapers' Company, Throgmorton Street, was the occasion for seeing many grotesque and curious designs as well as many graceful and picturesque ones. It is known that prizes of 500 guineas for the best and 250 guineas for the second best design were offered by the promoters of the Tower Company for a tower of not less than 1,200 feet in height. The jurors, who include Sir Frederick Bramwell, Sir Benjamin Baker, Sir E. Harland, Professor A. B. Kennedy, E. H. Carbutt, Esq., T. F. Moulton, Esq., Q.C., C. Liddell, Esq., and Thomas Verity, Esq., have not yet made their awards. Amongst the most attractive designs are "Light, Health, Rest, Pleasure," which consists of a circular column resting on a

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hollow hexagonal plinth provided with broad radiating wings; the material is iron and steel throughout, and the total height about 1,300 feet; "Time is Money," a steel tower of allegorical design, carring a large clock under its second platform; "Ye Vegetarian Tower," a gigantic obelisk, 2,007 feet in height and 644 feet square at the base. "Lamont's Terrestrial Globe" is an ingenious design composed of a group of five towers, the main central one, 440 metres high, supporting a large terrestrial globe and four secondary ones, and is so arranged that the largest platform will be at the highest levels. Many of the designs greatly resemble the "Eiffel Tower." There is one, however, designed by Mr. Ross to differ as much as possible from the Eiffel Tower. The skeleton of this consists of cast-steel tubes, while the ornaments are chiefly of the rose, shamrock, and thistle cast in iron panels. The designs sent in as suggestions only, and not admissible for competition, exhibit some singular ideas. One hailing from Australia is a sketch of a design for "obviating the terrors of sea-sickness on the Channel passage until such time as the Channel Tunnel may have become an accomplished fact." The vehicle "can be towed across from one side to the other with great facility," the designer tells us, and that "the novelty of the thing would combine to make it the talk of the day!" The success of the Tower Company remains to be seen. There may be a few advantages attached to having such a building in our midst, if those advantages are turned to good practical account, but for our own part we think the money and the skill of the engineers might be put to a better use in carrying out the many reforms and improvements needed in making London purer, healthier, and happier.

THE PUBLIC HEALTH

During May 1890.

The mean temperature during the month of May at the Royal Observatory, Greenwich, was 54°·8; it exceeded by 2°·2 the average May temperature in one hundred years, and was higher than in the corresponding period of any year since 1878, with the exception of 1889, when the mean was as high as 56°·5. An excess of temperature prevailed on twenty-three days during the month, while on the remaining eight days it was below the average. The coldest day of the month was the 9th, when the mean temperature was 48°·7, and 2°·1 below the average; the warmest day was the 25th, when the mean was as high as 64°·3, and showed an excess of 8°·4. Rain was measured on fourteen days during the month under notice, to the aggregate amount of 1·3 inches, which was 0·8 of an inch below the average amount in the corresponding period of sixty-one years. During the first five months of the current year the rainfall has amounted to 8·1 inches, which was 0·7 of an inch below the average. The sun was above the horizon during 482·1 hours during May, and as many as 223·9 hours of bright sunshine were recorded at Greenwich; this amount considerably exceeded the average, and, with one exception, was greater than in the corresponding period of any year on record. The wind was easterly during the first ten days of the month, after which westerly winds generally prevailed.

In the twenty-eight large English towns dealt with by the Registrar-General in his weekly returns, which have an estimated population of nearly nine and three-quarter millions of persons, 21,146 births and 14,072 deaths were registered during the four weeks ending Saturday, May 31. The annual birth-rate, which had declined during the four preceding months from 32·7 to 30·8 per 1,000, further fell to 28·4 during the month under notice, and was below that recorded in the corresponding period of any of the eight preceding years, 1882–89. In London the birth-rate was only 27·4 per 1,000, while it averaged 29·1 in the twenty-seven provincial towns, among which it ranged from 19·9 in Huddersfield, 21·0 in Brighton, and 24·6 in Bradford, to 33·3 in Leeds, 35·7 in Preston, 36·4 in Cardiff, and 39·4 in Newcastle-upon-Tyne.

The rate of mortality in the twenty-eight towns, which had declined from 25·7 to 20·4 per 1,000 in the four preceding months, further fell to 18·9 during the month under notice, and was 1·0 below the average rate in the corresponding periods of the eight preceding years, 1882–89. The lowest death-rate in these towns last month was 14·0 per 1,000 in Huddersfield. The rates in the other towns, ranged in order from the lowest, were as follow:—Nottingham, 14·9; Brighton, 15·3; Wolverhampton, 15·5; Leicester, 15·6; Portsmouth, 15·7; Bristol, 15·9; Birkenhead, 16·6; London, 17·1; Cardiff, 17·2; Plymouth, 17·2; Hull, 18·0; Norwich, 18·0; Birmingham, 18·1; Oldham, 18·5; Bradford, 19·4; Blackburn, 20·3; Salford, 20·6; Liverpool, 20·8; Leeds, 21·1; Preston, 21·2; Halifax, 22·7; Derby, 23·3; Sheffield, 24·1; Sunderland, 24·1; Newcastle-upon-Tyne, 26·9; Bolton, 27·6; and the highest rate during the month, 30·8 in Manchester. While the death-rate in London last month, as above stated, was only 17·1 per 1,000, it averaged 20·1 in the twenty-seven provincial towns. The 14,072 deaths from all causes in the twenty-eight towns during the four weeks of May included 1,699 which were referred to the principal zymotic diseases; of these, 561 resulted from whooping-cough, 504 from measles, 206 from scarlet fever, 165 from diphtheria, 154 from diarrhœa, 106 from "fever" (principally enteric), and 3 from small-pox. These 1,699 deaths were equal to an annual rate of 2·3 per 1,000, which was below the average rate in the corresponding periods of recent years. The death-rate in London last month from the principal zymotic diseases was equal to 2·6 per 1,000, while in the twenty-seven provincial towns it averaged 2·0, and ranged from 0·7 in Leicester and in Nottingham, and 0·8 in Huddersfield, to 2·5 in Birmingham, in Bolton, and in Manchester, 3·2 in Liverpool, 3·4 in Salford, and 7·5 in Derby.

Whooping-cough was the most fatal zymotic disease in the twenty-eight towns during the month under notice. The rate of mortality from this disease, which had been 0·83 and 0·85 per 1,000 in the two preceding months, declined again to 0·75 during May, but exceeded the average rate in the corresponding periods of the eight preceding years, 1882–89. In London the death-rate from whooping-cough was as high as 1·05 per 1,000, while in the twenty-seven provincial towns it averaged 0·50, and was highest in Bolton, Sheffield, and Derby. The death-rate from measles, which had increased from 0·26 to 0·52 per 1,000 in the three preceding months, further rose to 0·68 during May, but was below the average rate in the corresponding periods of the eight preceding years. In London the rate of mortality from measles was equal to 0·91 per 1,000, while it averaged 0·48 in the twenty-seven provincial towns, among which this disease showed the highest proportional fatality in Liverpool, Birmingham, and Derby. The rate of mortality from scarlet fever, which had been 0·29 and 0·24 per 1,000 in the two preceding months, rose again to 0·28 during the month under notice, and was higher than that recorded in the corresponding period of any of the five previous years. In London the scarlet fever death-rate was only 0·17 per 1,000, while it averaged 0·37 in the twenty-seven provincial towns, and was highest in Liverpool, Bolton, and Sunderland. The death-rate from diphtheria, which had declined from 0·25 to 0·19 per 1,000 in the three previous months, rose again to 0·22 during May, and exceeded that recorded in the corresponding period of any of the eight preceding years. In London the death-rate from diphtheria was as high as 0·28 per 1,000, while it averaged only 0·17 in the twenty-seven provincial towns, among which, however, this disease was fatally prevalent in Manchester, Newcastle-upon-Tyne, and Salford. The rate of mortality from diarrhœa was equal to 0·21 per 1,000, which was slightly below the average in the cor-

responding periods of recent years. The death-rate from different forms of "fever" (including typhus typhoid, and simple and ill-defined forms of fever), which had been 0·12 per 1,000 in each of the two preceding months, rose to 0·14 during the month under notice, but with one exception was below that in the corresponding period of any year on record. In London the rate of mortality from "fever" was only 0·07 per 1,000, while it averaged 0·20 in the twenty-seven provincial towns, among which this disease showed the highest proportional fatality in Cardiff. Three deaths resulted from small-pox in the twenty-eight towns during last month, of which one was recorded in London, one in Huddersfield, and one in Hull; 6 small-pox patients were admitted into the Metropolitan Asylum hospitals during May, and 5 remained under treatment on Saturday, June 31. These hospitals contained 1,014 scarlet fever patients on the same date, against numbers declining from 1,569 to 1,037 at the end of the six preceding months; the weekly admissions during May averaged 108, against 71 and 80 in the two previous months.

The rate of infant mortality in the twenty-eight towns, measured by the proportion of deaths under one year of age to registered births, was equal to 149 per 1,000, and, with one exception, exceeded that recorded in the corresponding period of any of the eight preceding years, 1882–89. In London the rate of infant mortality was 149 per 1,000, and corresponded with the mean rate in the twenty-seven provincial towns, among which the rate ranged from 89 in Portsmouth, 90 in Huddersfield, and 98 in Birkenhead, to 179 in Salford, 180 in Sheffield, 191 in Preston, and 197 in Manchester.

The death-rate from diseases of the respiratory organs, judged by the metropolitan returns, was below the average during last month. The weekly number of deaths referred to these diseases in London averaged 289, and the annual death-rate was equal to 3·4 per 1,000.

The causes of 277 of the 14,072 deaths in the twenty-eight towns during the four weeks of May were not certified, either by registered medical practitioners or by coroners. These uncertified deaths were equal to 2·0 per cent. of the total deaths, which showed a slight further decline from the proportions in recent months. In London the proportion of uncertified deaths was 0·9 per cent., while it averaged 2·7 in the twenty-seven provincial towns. The cause of only one death was uncertified during the month in Portsmouth, in Plymouth, in Derby, in Oldham, and in Blackburn; while the highest proportions of uncertified deaths were recorded in Birmingham, Liverpool, Halifax, and Hull.

Among the population living in the outer ring of suburban districts around London, estimated at upwards of one and a quarter millions of persons, the death-rate from all causes during May was equal to 15·1 per 1,000, which was slightly below the average rate in the corresponding periods of the eight preceding years, 1882–89. During the four weeks ending May 31, 85 fatal cases of whooping-cough, 68 of measles, 18 of diphtheria, 13 of diarrhœa, 7 of scarlet fever, 6 of "fever" (principally enteric), and not one of small-pox, were registered in the outer ring; in all, 197 deaths resulted from these principal zymotic diseases, equal to an annual rate of 1·9 per 1,000, which corresponded with the average rate in the same period of the eight preceding years. Compared with the preceding month, the fatality of measles showed an increase, while that of each of the other zymotic diseases showed a decline. Of the 68 deaths from measles, 16 occurred in Croydon, 17 in Tottenham, and 5 in Willesden registration sub-districts. The 85 fatal cases of whooping-cough included 33 in the district of West Ham, and 12 in Tottenham sub-district; and of the 18 deaths from diphtheria, 3 occurred in Croydon sub-district.

Mr. John Horniman, of Croydon, has given £25,000 for the establishment of a seaside convalescent home for children.

NOTIFICATION OF INFECTIOUS DISEASES

IN 88 SANITARY DISTRICTS.

The table on pp. 599 and 600 contains uniform statistics relating to sickness and mortality in 88 sanitary districts, including twenty-one of the largest English towns. The population of the towns for which we are enabled to publish complete statistics for the month of May is estimated at about seven millions of persons. The annual rate of mortality from all causes in these towns during the month under notice averaged 19·4 per 1,000 of their aggregate population, against rates declining from 25·6 to 20·9 in the three preceding months. The rates of mortality during May were considerably below the average in Burton-on-Trent, Darlington, Darwen, Kidderminster, Reading, Ripon, Todmorden, and Wimbledon; while they showed the largest excess in Aberdeen, Bolton, Dover, Gorton, Jarrow, Keighley, Lancaster, Manchester, and Wigan. The death-rate from the eight infectious diseases dealt with in the table averaged 0·64 per 1,000 during May, against 0·74 and 0·55 in the two preceding months. No deaths from any of these infectious diseases were registered last month in twenty-five of the 88 sanitary districts, whereas the rate of mortality from these diseases considerably exceeded the average in Gillingham, Great Yarmouth, Jarrow, Keighley, Manchester, Ripon, Rochester, Salford, and Wakefield. Scarlet fever showed the highest proportional fatality in Bolton, Gillingham Keighley, Manchester, Rotherham, Sheffield, and Swansea; diphtheria in Manchester and Salford; enteric fever in Gorton, Great Yarmouth, and Jarrow; measles in Aberdeen, Basford, Birmingham, Derby, Dover, Dundee, Heston and Isleworth, and Wigan; and whooping-cough in Aberdeen, Derby, Dover, Edinburgh, Norwich, Sheffield, and Willesden. Five deaths from puerperal fever were recorded in Manchester, and 4 in Nottingham. A fatal case of small-pox was registered in Hull, and one in Huddersfield, but not one in any other of the 88 sanitary districts. With reference to the notified cases of infectious disease in these sanitary districts during May, it appears that the proportion of the population reported to be suffering from one or other of the eight diseases specified in the accompanying table was equal to 5·1 per 1,000, against rates steadily declining from 5·5 to 4·4 in the first four months of the current year. No case of any of these diseases was notified during the month under notice in Alverstoke, Bilston, Bournemouth, Coventry, Guildford, Leamington, Llanelly, Ripon, or Weymouth; and while the proportion did not exceed 1·0 per 1,000 in Ashton-under-Lyne, Bury, Leek, and Macclesfield, it ranged upwards in the other districts to 9·1 in Manchester, in Sunderland and in Widnes, 11·1 in Stockton-on-Tees, 11·4 in Jarrow, 12·2 in Bolton, 15·4 in Gillingham, 17·4 in Rochester, and no less than 31·0 in Keighley. The exceptionally high rate in the last-mentioned town was due to the epidemic prevalence of scarlet fever, 66 cases of this disease having been notified during May. Diphtheria was proportionally most prevalent in Bolton, Burton-on-Trent, Keighley, Manchester, Salford, and Willesden; scarlet fever in Bolton, Darlington, Gillingham, Keighley, Manchester, Rochester, Stockton-on-Tees, and Widnes; typhus in Bolton and Jarrow; and enteric fever in Barrow-in-Furness, Cardiff, Darlington, Gorton, Great Yarmouth, Jarrow, Portsmouth, Stockton-on-Tees, Tynemouth, and Wakefield. Seven cases of puerperal fever were notified during May in Manchester, and 5 in Salford. Seven cases of small-pox were notified in Hull during the month under notice, and 3 in Huddersfield, but not one in any of the other sanitary districts.

Sir James Crichton-Browne gives the following as the relative weights of the brains of different races: The Scotch 50 oz.; the English, 49 oz.; the Germans, 48·3 oz.; and the French, 47·9 oz.

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Sanitary Districts.	Estimated Population middle of 1890.	Small-pox.		Scarlet Fever.		Diphtheria.		Typhus Fever.		Enteric Fever.		Cholera.		Relapsing Fever.		Puerperal Fever.		Totals of Preceding Columns.		Annual Rate per 1,000 Persons Living.		Deaths from other Zymotic Diseases.				Deaths from all causes.
		Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Reported Cases.	Deaths.	Ill-defined Fever.	Measles.	Whooping-cough.	Diarrhœa.	
Jarrow	32,000	—	—	3	—	1	1	14	2	17	5	—	—	—	—	—	—	35	8	11·4	2·6	—	—	3	—	78
Keighley	29,660	—	—	66	6	10	1	—	—	2	—	—	—	—	—	—	—	78	6	31·0	2·4	—	—	—	1	72
Kidderminster	26,000	—	—	2	—	1	—	—	—	1	—	—	—	—	—	—	—	4	—	1·8	—	—	—	—	—	24
Lancaster	28,301	—	—	6	—	—	—	—	—	2	—	—	—	—	—	—	—	8	—	3·7	—	—	—	1	1	60
Leamington	24,871	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	30
Leek	14,057	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	1	—	0·8	—	—	—	1	—	23
Leicester	154,344	—	—	39	4	4	—	—	—	9	1	—	—	—	—	—	—	52	5	3·5	0·3	—	—	1	5	232
Llanelly	23,559	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	1	28
Macclesfield	37,514	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	0·7	—	—	—	2	1	51
Manchester	379,437	—	—	231	23	56	16	—	—	36	15	—	—	—	—	7	5	330	59	9·1	1·6	1	10	14	15	1,105
Norwich	95,352	—	—	10	—	7	2	—	—	11	2	—	—	—	—	—	—	28	4	3·8	0·5	—	1	7	—	132
Nottingham	230,000	—	—	87	3	6	—	—	—	17	3	—	—	—	—	4	10	110	10	4·7	0·4	—	2	4	9	380
Oldham	146,716	—	—	21	3	—	—	—	—	8	2	—	—	—	—	1	—	30	5	2·7	0·4	—	—	8	3	208
Portsmouth	142,952	—	—	45	1	7	3	—	—	38	3	—	—	—	—	—	—	90	7	8·2	0·6	—	—	1	2	170
Preston	105,163	—	—	26	2	3	1	—	—	3	—	—	—	—	—	—	—	32	3	3·2	0·3	—	1	1	7	204
Reading	62,271	—	—	—	—	3	1	—	—	2	2	—	—	—	—	1	1	6	4	1·1	0·8	—	—	1	3	65
Ripon	7,670	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	1	—	1·5	—	—	—	—	7
Rochdale	73,772	—	—	22	2	1	—	2	—	—	—	—	—	—	—	2	—	25	4	3·9	0·6	—	—	1	1	103
Rochester	25,000	—	—	35	—	—	—	—	—	1	—	—	—	—	—	1	1	37	1	17·4	0·5	—	—	3	—	43
Rotherham	36,807	—	—	21	5	—	—	—	—	—	—	—	—	—	—	—	—	21	5	6·0	1·4	—	—	—	1	60
Rowley Regis	32,100	—	—	1	—	5	1	—	—	—	—	—	—	—	—	—	—	6	1	2·2	0·4	—	1	1	2	38
Salford	242,509	—	—	65	10	63	24	—	—	18	2	—	—	—	—	5	1	151	37	8·1	2·0	—	2	15	10	386
Scarborough	36,200	—	—	4	—	2	—	—	—	1	1	—	—	—	—	—	—	7	1	2·0	0·3	—	—	1	—	59
Sheffield	332,837	—	—	167	19	25	3	—	—	7	2	—	—	—	—	1	1	200	25	7·0	0·9	—	12	25	8	673
Smethwick	34,300	—	—	14	2	2	—	—	—	1	—	—	—	—	—	—	—	17	2	5·2	0·6	—	—	—	—	51
Southport	41,585	—	—	3	—	4	2	—	—	—	—	—	—	—	—	—	—	7	2	2·0	0·6	—	—	—	—	50
Stafford	21,660	—	—	9	—	—	—	—	—	—	—	—	—	—	—	—	—	9	—	4·9	—	—	—	—	—	30
Stalybridge	28,184	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Stockton-on-Tees	50,000	—	—	36	1	1	—	—	—	10	1	—	—	—	—	—	—	47	2	11·1	0·5	—	—	3	—	90
Stretford	21,000	—	—	5	—	—	—	—	—	—	—	—	—	—	—	—	—	5	—	2·8	—	—	—	—	—	24
Sunderland	136,506	—	—	75	9	4	—	1	1	14	2	—	—	—	—	1	—	95	12	9·1	1·1	—	2	2	3	252
Swansea	93,700	—	—	44	8	4	—	—	—	4	—	—	—	—	—	1	1	53	9	6·7	1·1	—	4	1	—	121
Todmorden	25,750	—	—	5	—	1	—	—	—	—	—	—	—	—	—	—	—	6	—	2·7	—	—	—	—	—	28
Tottenham	?	—	—	13	1	11	2	—	—	3	1	—	—	—	—	—	—	27	4	?	?	—	17	9	—	116
Tynemouth	49,538	—	—	7	—	2	—	—	—	9	2	—	—	—	—	—	—	18	2	3·8	0·4	—	1	1	1	99
Wakefield	33,676	—	—	7	—	2	—	—	—	7	2	—	—	—	—	—	—	16	2	6·8	0·9	—	—	—	—	52
Wallasey	33,500	—	—	2	1	2	1	—	—	4	1	—	—	—	—	1	1	9	4	3·2	1·4	—	—	1	—	46
Warrington	50,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
West Bromwich	64,500	—	—	22	—	1	1	—	—	8	2	—	—	—	—	—	—	31	3	5·0	0·5	—	3	3	2	94
West Ham	180,000	—	—	44	2	11	2	—	—	4	1	—	—	—	—	1	1	60	6	3·9	0·4	—	1	12	5	228
Weymouth	14,134	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	21
Whitehaven	20,000	—	—	4	—	—	—	—	—	3	2	—	—	—	—	—	—	7	2	4·1	1·2	—	—	—	—	27
Widnes	31,000	—	—	19	2	—	—	—	—	3	1	—	—	—	—	2	—	24	3	9·1	1·1	—	—	—	—	48
Wigan	54,509	—	—	11	1	—	—	—	—	2	2	—	—	—	—	1	—	14	3	3·3	0·7	—	18	1	1	108
Willesden	57,158	—	—	14	—	9	—	—	—	2	—	—	—	—	—	1	1	26	1	4·7	0·2	—	5	7	1	77
Wimbledon	27,000	—	—	2	—	1	1	—	—	—	—	—	—	—	—	—	—	3	1	1·3	0·4	—	—	—	—	24
Wolverhampton	83,407	—	—	30	—	1	—	—	—	1	1	—	—	—	—	—	—	32	2	4·0	0·3	—	3	3	2	124
York	75,327	—	—	6	—	—	—	—	—	6	—	—	—	—	—	—	—	12	—	2·1	—	—	1	—	2	122

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SPECIAL REPORTS, ABSTRACTS, &c.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.

A MEETING of this Society was held on May 9, Mr. H. ARMSTRONG, President, in the chair. MR. JOHN BROWN, of Bacup, read a paper on

"PLUMBISM AND WATER SUPPLY,"

in which he called attention to the fact that while the comparatively few cases of lead poisoning met with in London were all, or nearly all, traceable to working in lead in some form, and lead poisoning from drinking water was throughout the greater part of the country so rare that the alleged danger of lead pipes was by some looked on as imaginary, it was quite otherwise in Yorkshire. In those towns that obtained their supplies from catchment basins on the moors, lead poisoning was of constant occurrence, not in isolated cases only, but in an epidemic or endemic form. It was thought by some medical men that it was becoming more frequent, but he attributed this to more accurate diagnosis, many cases having formerly, as some were even now, registered as epilepsy, Bright's disease, uræmic convulsions, cerebro-spinal fever, meningitis, &c. Four such causes of death were recently reported by three medical practitioners from one small block of houses in Bacup, but on investigation he found a number of cases of lead poisoning in the same houses, and the water highly charged with lead.

In every district where plumbism occurred, the water was obtained from the moorlands, was very soft, *i.e.* of not more than 2 or 3 degrees of hardness, and had an acid reaction. There was little organic matter; the chlorine averaged half a grain per gallon, and the reservoirs were not stocked with fish. The nature of the acid was doubtful; it had been said to be sulphuric, but he had failed to detect any mineral acid, and from the tests he described he believed it to be an organic acid. At Bacup and at Sheffield the water contained iron, derived from the pyrites in the millstone grit, and he proved experimentally that both moorland and distilled water dissolved iron out of the shale, acquiring at the same time an acid reaction. Mr. Allen held that the sulphuric acid when present was derived from these sulphides, but he would rather refer it to the sulphurous acid, of which 350 tons were given off daily into the air of Manchester and Salford. When the reservoirs were stocked with fish, as was always the case with water drawn from sewage polluted rivers, and occasionally also with that from the moors, plumbism was not observed; this he attributed to the abstraction of the oxygen, which he believed, from numerous experiments, to be the main agent in the solution of lead. Thus lead poisoning was far more frequent in winter, when the temperature of the water, being that of the air, was not above 40 degrees, and the volume of dissolved gases greatest. Pressure, too, for the same reason, favoured the solution of lead, especially when interruption in the supply led to increased æration, as seen by effervescence of the water issuing from a tap. The Bacup water destroyed brass taps with extraordinary rapidity.

Lead existed in water in two forms, viz. a carbonate in suspension, and a hydrate in solution. The addition of lime he found to increase rather than, as he had expected, to diminish the solvent action, as did nitrates and nitrites. The presence of iron favoured, but that of alkaline carbonates hindered or prevented the solution of lead.

Mr. Power had suggested that micro-organisms might play an important part, but moorland water, especially in winter, was remarkably free from such, while no serious outbreak had ever occurred in towns supplied with sewage polluted water. Moorland water, after having been passed through carbon filters, ceased to dissolve lead, obviously from the absorption of the oxygen by the carbon, sometimes to the extent of six-sevenths. Carbonates of lime and of soda were equally efficient in preventing the solution of lead, but the latter had the advantage of not causing turbidity. Borings into the millstone grit yielded abundant supplies of water, containing sometimes not more than one-seventeenth of the oxygen present in moorland water, and should be encouraged. If, however, the moorland water were used it should be filtered through "sandrock," or some form of carbon, and the reservoirs should be well stocked with fish.

Mr. WYNTER BLYTH criticised several of Mr. Brown's chemical conclusions, and expressed his belief that the organic acid in these waters was acetic.

Mr. CASSAL, too, insisted on the fallacies of the "tropæolin," and other aniline tests, and remarked that all water dissolved lead more or less, though the presence of other bodies would increase or reduce the solvent power. He also maintained the formation of sulphuric acid from sulphides by oxidation.

Dr. CORFIELD had had much experience of waters from the Hastings sand, which were soft, acid, and contained iron in the form of a bicarbonate. They acted most energetically on lead, zinc, tin, and iron, and he had been compelled to have recourse to service pipes of wrought iron, well lined, while fresh from the foundry, with Dr. Angus Smith's varnish. Barff's iron had too many flaws in the surface of the metal to be available. Pure lead was more easily acted on by all water than the impurer kind, and much lead, absolutely pure, was now imported from silver-producing countries cheaper than that obtained here. He attached more importance to the acid than to the oxygen, though the latter doubtless assisted the action.

THE KODAK CAMERA.

Dr. SYKES exhibited a new form of the "Kodak" photographic camera, which he believed would be of great use to medical officers of health in representing the actual state of insanitary premises. Besides its portability, and the perfection of its mechanism, it presented an entirely new feature in the substitution of a flexible material rolled off one spool on to another, as a vehicle for the bromide of silver film, instead of a number of separate glass plates. Fifty large, or a hundred small photographs could thus be taken in succession without opening the camera, and for a payment of two guineas the company would undertake the development, printing, and mounting of the pictures.

THE ASSOCIATION OF PUBLIC SANITARY INSPECTORS OF GREAT BRITAIN.

THE members of the Association of Public Sanitary Inspectors of Great Britain paid a visit to Leamington on May 24. This visit constituted the fifth annual provincial meeting of the Association.

After the reception by the Mayor, the members of the Association assembled in the Council Chamber, Town Hall. The MAYOR (Councillor J. Fell) first took the chair, and the attendance included Sir Douglas Galton, K.C.B., LL.D., F.R.S., Mr. Hugh Alexander (Chairman of the Association), Mr. G. Lewis Thomas, M.A., LL.M. (hon. Council of the Association), Mr. S. C. Legg (hon. Secretary to the Association), Alderman S. T. Wackrill, J. E. Edlmann (Chairman of the Health Committee), S. Flavel, and Councillor H. Bright; Councillor Boddington, Warwick; Messrs. W. De Normanville (Borough Engineer), Leamington; S. Browne, M.D. (Medical Officer of Health), Leamington; J. F. T. Sykes, M.D., North St. Pancras Medical Officer; E. Reeves Boulter, Bexley; Thomas Broughton, Garston; James Woonton, St. George's-in-the-East; Robert Chamberlain, Hammersmith; Daniel Richards, Battersea; William Bland, Barton-upon-Irwell; James Roscoe, West Derby; James K. Leggatt, Wigan; A. H. Luker, Gravesend; Valentine W. H. Redfern, Rugby Rural District; Noah Deeks, Erdington; John Lowry, Seisdon Union; James Miller, Prestwich; A. Taylor, Wallasey; William Stansfield,

W. G. Lacy, Wandsworth; R. Dykes, Northampton; W. H. Watson, St. James's, London; J. Osborne, St. Pancras, London; J. W. Kirley, Bristol; A. R. Hills, City of London; H. K. Blake, Engineers' Department, Guildhall; E. R. Alexander (visitor); T. P. Catten, Chelsea; T. Ashdown, St. Margaret's, Westminster; T. G. Dee, St. John's, Westminster; S. Fairchild, Clapham; Henry J. Godsall, Saltley; John Parker, Birmingham; John Brook, Stratford-on-Avon; C. W. Poole, Battersea; T. Crane, Battersea; E. F. Clapp, Hackney; Edward Trammige; E. Y. Young, Clapham; W. H. Austin, Leamington; T. P. Raby; Joseph J. Goode, Leamington; Arthur Perry, Marylebone; Edward C. Peel; T. B. Warren, Southam; E. M. Richards, Warwick; G. Allsopp, Mansfield Union; W. J. Treadwell, Brackley Rural; R. F. Shillingford, Buckingham; W. D. White, Banbury; T. White, Kakeham Union; F. A. Aris, Liverpool; S. Honeycombe, Northfleet, Kent; S. MacHay, Leamington; Arthur A. Grist, St. Saviour's, London; G. J. Brigan, South Norwood; A. Stanley, Croydon; E. Mitchell, Croydon; and C. T. Garrett, Ashby-de-la-Zouch.

The MAYOR OF LEAMINGTON, in welcoming the Association, said: I know of no branch of sanitary science which is of more importance than the one you are engaged in. It is not long since when anybody could get an appointment as sanitary inspector. Sometimes old army pensioners were found occupying this position, although they had absolutely no knowledge of the science required by the post which they filled. They had absolutely no idea of the importance of the duties they had undertaken. They did not realise the great reponsibilities that rested on them, and it was only when your Association, and other associations like that of the Civil Engineers began to form themselves like trades unions that your science took its proper place. The general public then began to recognize your important status, and I have no doubt that very shortly you will be regarded as a very much more important and influential body than you are at the present time. I am certain that in trying to still further raise the status of your profession the general public will back up your efforts. I do not think that we can show you anything that you do not know, but we can show you some very first rate waterworks. We have magnificent waterworks here, and you will see exactly how we obtain our supply of water. You will further have an opportunity of visiting our sewage works and seeing how we dispose of our sewage. Some of you, I believe, have already had the opportunity of going over our baths, and seeing how we look after the cleanliness of the people of the town. We claim, in fact, to have the best appliances for the purposes of promoting cleanliness, providing pure water, and disposing of the sewage in the most scientific manner.

Mr. H. ALEXANDER then gave an address as chairman of the Association. He said that the Association was founded in 1883, mainly by the great energy and the organising faculty which the secretary possessed in such a large degree. They were, in founding the Association, very fortunate in securing as their president Mr.—now Sir Edwin—Chadwick, the great work of whose life received a most fitting crown by the formation of that Association and its progress as manifested to-day. The Association at once showed that it met a really felt want, and its numbers swelled until, including their brethren of the north-west district, they had now a membership of 500. They considered that that was a great work which had been accomplished. Previous to the establishment of the Association there was the same number of inspectors as to-day, but yet, throughout the country there was not a voice that could be lifted up to represent their interests, neither was there a united voice from the inspectors themselves that could be lifted in the interests

The Chairman of the Association on its aims and objects.

sanitary inspectors. and who were from day to day working in the interests of that public health. Just one or two words as to the work that had been done. It was not very obvious yet, but it might very well be said that they had been sowing seed, the harvest of which had yet to be reached. Legislation had been blocked of late years, and it had not been possible for any government to give effect to their good purposes even in respect to sanitation. About 4 years ago they had the honour and privilege of waiting by deputation on the President of the Local Government Board, then Mr. Stansfeld. He stated to them that but for the fact that Mr. Gladstone's Government would very likely soon be dispossessed, he could have promised them that the representations they made should be attended with practical effect. Since that time they had frequently addressed themselves to the Local Government Board, and quite recently a copy of their last report was sent to that Board. He had no doubt the document had been pigeonholed; and when the position of sanitary inspectors came to be considered by the Local Government Board he had no doubt it would have its proper effect. Those were the objects they were striving for, and he would say, finally, to members throughout the country who might sometimes think that the Executive were idle, and were resting on their oars, that this was not the case, but that they were constantly, actively, and zealously engaged in seeking to further the interests of the whole Association.

The address prepared by Sir Edwin Chadwick was then read by Sir Douglas Galton, from which we make the following extracts:—

Sir Edwin Chadwick's address.

I cannot do better in opening this address than congratulate the Association on it continued success. It has been a cause of continual regret to me that indifferent health has prevented me from taking part in your movements and in sharing in your useful work. I have, at the same time, watched the course of your proceedings, and, in my way, have had under consideration many subjects, old and new, bearing upon our common endeavours. Permit me in a few words to refer to one or two subjects appropriate to the occasion of your present meeting.

The health of the police.

From the date of the establishment of the police force I have taken an interest in its sanitary welfare. I was bound to do so, because one of my earliest essays was on the organization of that force. It would be a great consolation to me if I could now report that the health of the police is as good as it ought to be. This is far from being the case. I find that the privates of the Metropolitan Police Force have excessive sickness, and that men having an average of 25s. a week pay as much as 6s. and 7s. a week rent for unexamined and insanitary dwellings. I am convinced that upon examination it will be found that for much less rent than they now pay large edifices might be erected for the constables far superior to the existing Peabody and other model dwellings, and with great economy to them, and great benefit to their own health, and that of their families, as well as with great public advantage. At the top of St. Paul's Cathedral, Dr. Percy Frankland finds ozone in the air, but he finds none on the level of the ground beneath. Dr. B. W. Richardson, since we last met, has invented means for the copious and cheap production of ozone. This may render it unnecessary to carry up conduits to a great height to bring down ozone. Another advance that requires notice is the machinery for cheap washing with tepid water. Since its use the death-rate of the German army has been brought down to 5 per 1,000, and it is proved that they have been largely exempted from the recent epidemic; they have kept down their death-rate to 5 in a 1,000, whilst the death-rate in our home army is about 8 in a 1,000. The cost of washing 100 men with tepid water in Germany is about 6d., but here an advance has been made by Mr. W. Bartholomew, who,

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with his improved jets, up as well as down, can more effectually wash the same number of men for probably not more than 4½d. In France they are beginning to try this washing with tepid water on soldiers, and it is shown that it may be done in 5 minutes of time as against 20 in the bath, and with 5 gallons of water as against 60 and 70 gallons in the bath. Moreover, it is declared that this is accomplished at the cost of a *centime* per head, soap and towel included.

What I have recited, I submit, are great advances in sanitation and in means of economy since I last addressed you. I have already vindicated in various ways my opinion of the high qualities required in sanitary inspection, and on the present inadequate means for securing these qualities, the chief of which is, I hold, the utterly inadequate pay given to inspectors generally, and the tendency to provide a low and ignorant waste and incompetency to see to the application of the great mechanical improvements which I have described. To facilitate progress in sanitation, a general form of returns should be required in the shape provided, after much study, by Dr. Richardson and myself. In the furtherance of sanitary inspection there are many other points which lie perhaps a little apart from your daily duties, but which are useful for you to become acquainted with as matters of sanitary knowledge.

Good sanitary inspection.

To secure a central authority for this kingdom, a Minister who can guide and direct sanitation in all its departments is an object towards which every sanitarian should strive. The fact that a Minister of Agriculture has been appointed should only render us all the more determined to add to the Cabinet a Minister of Health. To you, as sanitary men, in the most practical of practical senses, the appointment is vital. You and your labours will never be understood until you have such an official exponent of what you are and what you do in one of the Houses of Legislature, and I cannot do better than close my present address by urging you to organize and agitate for this much-demanded public department until the thing is done. It must some day be done, and for the Association to take a prominent part in the struggle to get it done will be a lasting honour, and a further surety of continued respect and prosperity.

A Minister of Sanitation a necessity.

The MAYOR OF LEAMINGTON moved a vote of thanks to Sir Edwin Chadwick for the paper.

Alderman WACKRILL seconded the vote of thanks. Leamington, he said, was a modern town, and it was likewise a model town. The importance of perfect sanitation had all along been considered by the local authority—right from the commencement of Leamington's life as a town. They were not a century old. There was one important matter in reference to sanitation—the isolation of disease, for which, to some extent, they had provided. He should recommend them to visit the Infectious Hospital at Heathcote, so that they could inspect the provision for isolation made. Their sanitary officers were so far under the control of their sanitary committees that very little disease escaped their observation, but yet, in spite of all their vigilance, some cases did escape them by reason of the secrecy that was maintained by relatives. They would find, on referring to health statistics, that Leamington was especially favoured, and he had no doubt that it arose from the fact that they had good drainage, a good water supply, and a good supervision by their sanitary officers in the matter of disease isolation. Notwithstanding so many improvements, and such a large outlay, their rates were as low as, and he might perhaps say lower than, those of almost any town in the kingdom. It was just because they had spent their money properly from the outset. What had to be done they had done well, so that it did not need doing a second time. Although their General District Rate now was only 3s. in the £, in a few years many of their loans would have expired, and it would thus drop still lower. Leamington would then be one of the cheapest, best, and most sanitary towns to live in in the whole of the United Kingdom.

The CHAIRMAN read the following ode to Sir Edwin Chadwick, written by Mr. R. Farrow, Leek:—

Hail! Sire of Science, Hail!
Thy teachings still prevail—
Receive our thanks.
Heaven hath designed to bless
Thy labours with success,
May riper days with peace
Bear thee a crown.

Hail him afar, ye Isles!
Blest with his life-long toils,
Which hearts inspire.
United here to-day,
With grateful hearts we pay
Honour to age, and pray,
God bless our Sire.

Truth, dawning in the past,
Bursts into light at last
With health for all.
Men now enlightened live,
Health's laws revere and prove,
And God great blessings give
In just reward.

Our members far and near
Desire to soothe and cheer
Thy glorious life.
May it our triumph be
Thy great desire to see
All healthy, happy, free,
From youth to age.

Sir DOUGLAS GALTON then read his address on

"THE INFLUENCE OF RECENT LEGISLATION UPON THE DUTIES OF SANITARY INSPECTORS,"

which will be published in the SANITARY RECORD for July 15.

The Borough Engineer, Mr. W. DE NORMANVILLE, then read a paper on

"SANITATION IN LEAMINGTON,"

which will be published in the SANITARY RECORD of July 15.

The CHAIRMAN asked the meeting to accord by acclamation a vote of thanks to Mr. S. C. Legg, the hon. sec., for his services.

At the luncheon in the assembly room the Mayor presided, and the attendance included, besides those present at the meeting in the Council Chamber, the Mayor of Warwick (Alderman Cooke), Alderman Eardly Wilmot, Councillor Dr. Thursfield, Alderman Stanton (Warwick), Dr. Haynes, and Mr. H. C. Passman (Town Clerk).

The Inspectors next visited the sewage works, over which they were conducted by the Borough Engineer (Mr. De Normanville). On the motion of Mr. E. B. Boulter (Bexley), seconded by Mr. W. Bland (Barton-upon-Irwell), a vote of thanks was passed to Mr. De Normanville.

MAJOR FOSBERY, in receiving the inspectors at Warwick Castle, said he wished, on behalf of Lord Warwick, to welcome them very heartily.

Mr. WATSON proposed a vote of thanks to the Mayor of Warwick for conducting the party through Warwick, and for his presence during the day's proceedings. He only wished that time had permitted them to inspect some of the sanitary arrangements of the old borough. In the papers and speeches of the day he thought one point had been missed. Everyone seemed to pick out the landlords and the sanitary authorities for blame in all matters of defective sanitation, and no one had remarked how much proper sanitary arrangements depended upon the cleanly habits of the people themselves. All the sanitary inspectors would recognize how much they were hampered in their work by the uncleanliness, carelessness, and neglect of the people.

Mr. LEGGATT (Wigan), as a representative from the North-Western district, seconded the vote of thanks, and remarked that his experience at Wigan led him to agree with what had been stated by the previous speaker of the importance of cleanly and careful habits on the part of the people. The duties of sanitary inspectors would never be lightened until the people co-operated with

Alderman COOKE, in replying, expressed his pleasure in meeting the inspectors, and the pleasure of Warwick people to see the Association at their town. In modern towns there was no reason why sanitation should not be complete and thorough, but there was much greater difficulty in dealing with an old town like Warwick. They had great difficulty in finding out the old drains, where they went, and where the connections were broken off, for it was at these spots where mischief was likely to arise.

SMOKE ABATEMENT.

A PUBLIC meeting was held at the Mansion House on May 21, under the auspices of the Committee for testing Smoke Preventing Appliances.

The LORD MAYOR presided, supported by the Earl of Derby, Lord Howard of Glossop, Earl Fitzwilliam, Sir H. E. Roscoe, M.P., Mr. A. E. Fletcher, Chief Inspector of Alkali Works, Mr. Ernest Hart, President of the National Smoke Abatement Institution, and others.

Letters of regret were read from the Duke of Westminster, Earl Rosebery, Earl Percy, Lord Egerton of Tatton, Viscount Cross, Lord Rayleigh, and the Mayors of Manchester, Sheffield, Nottingham, and Leicester.

Mr. A. E. FLETCHER gave a brief account of the work the Committee contemplated carrying out, namely, to thoroughly test various known appliances by going where they were in actual operation, reporting on the kind of fuel used, and the general conditions of working, and when they had found out all ascertainable facts, publishing a report which would give anyone the information necessary to enable him to carry on his business without producing smoke. He said that the question of factory smoke was not a London question, as most of the smoke of London was from domestic chimneys, with which the Manchester Committee did not propose to deal.

LORD DERBY, in moving a resolution approving the proposed work of the Committee, expressed regret that the public took such a very small amount of interest in the movement. It was a subject which should interest everyone, for it certainly concerned everyone. But the fact was that the real evil against which they had to contend was public indifference. Since that meeting had been called he had received a visit from one of his tenants who rented collieries, and that gentleman told him that he had carried on his work for thirteen years without creating any smoke whatever, and had found it pay. The problem was really not more complex than the introduction of canals, railways, gas, &c., all of which had been overcome. All that was wanted was the strong pressure of public opinion.

LORD HOWARD OF GLOSSOP seconded the resolution, which was carried unanimously.

SIR HENRY E. ROSCOE, M.P., in proposing the second resolution, "That it is necessary to raise a fund to meet the expenses of this work, and this meeting pledges itself to use its best efforts to this end," said they were pretty well agreed as to the necessity for abating the smoke nuisance; the question was how was it to be done. He thought the Committee were quite right in confining their efforts to the reduction of smoke from factories, leaving the question of domestic smoke alone until the factory smoke had been dealt with. And it was very important to notice the means by which it was proposed to accomplish this. He did not think they could do better than follow the lines laid down by the veteran sanitarian, Dr. Angus Smith. They should take every available means of making the manufacturers themselves interested in the question. Before Parliamentary aid was sought it seemed to him that the fullest possible data should be collected, so that they might see what had been done and what could be done. Personally, he felt that although the question was beyond doubt a difficult one, yet it was not an insoluble one. He believed that if the Committee corporation were willing to try anything to get rid of the smoke nuisance, but at present they were in the difficult position of not knowing what were the best means available. If they recommended any particular appliance they were liable to be met with the assertion that it had been tried and had failed. They did not want to recommend any special appliance; they wanted to encourage every effort to show the public exactly what could be done and how to do it. Then they could step in and punish those who wilfully continued to produce smoke. He believed the corporations of the large commercial centres would be willing to contribute towards the cost of such investigations. Personally, as a member of the Salford Corporation, he should urge the claims of the Committee upon that body.

Professor ROBERTS-AUSTEN, C.B., said in order to persuade people that a thing *could* be done it was necessary to show them that it *had* been done. He maintained that there was less smoke in London now than 1882, and the reason of this was that there were more coke and gaseous fuel and better appliances used. It was believed by some persons that the poisonous gases from fires increased because visible smoke was reduced. He need not point out to those present who had a knowledge of chemistry that this notion was utterly fallacious. It had been proved to demonstration that smoke could be prevented, and was being prevented daily, from a great and increasing number of works of all kinds. He cited the result of a large number of tests, made by the Smoke Abatement Institution, of various appliances for preventing smoke from steam boilers, showing that a number of them were effective in preventing smoke absolutely, while others reduced it to a very material extent. In the face of such evidence, it was little short of criminal that people should not use appliances which could be readily obtained. It was very difficult to arouse public attention to the matter of smoke abatement, and he had found that the statement that 60 tons of carbon were suspended in the smoke-cloud over London on a winter's night attracted a vast deal more public interest than the various careful reports which had been printed and circulated with the object of showing how readily smoke might be avoided, and giving much information about the character and working of various appliances.

Mr. ERNEST HART, in moving a vote of thanks to the Lord Mayor, said he was surprised to find that several speakers had adverted to the matter as though the proposed series of tests was something quite new. The fact was, however, that it had been long ago ascertained that there was no description of manufacture, either great or small, which could not be carried on satisfactorily without the production of any smoke. One speaker had said that the question of factory smoke was not a London question. In answer to this he would like to point out that there were an enormous number of factories of all kinds in London, and anyone who went about with his eyes open could see for himself that the great majority of them were carried on smokelessly. At the same time in London, as elsewhere, there were a certain number of persons who would only act when they were compelled to, and, therefore, the authorities had to be vigilant, their vigilance being shown by the fact that there were no less than 700 complaints against industrial smoke-producers dealt with by the authorities in London during the past year. He could not say for certain, but he should think that was more than the prosecutions of a similar kind taken in all the other centres put together. What was wanted was not so much additional tests—there were scarcely a dozen new kinds of apparatus to test—as considerably increased public interest in the matter, greater willingness on the part of manufacturers to adopt the methods already proved efficient, greater independence on the part of smoke inspectors, and lastly, greater legislative powers to compel smoke-producers to discontinue their present wasteful and

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injurious manner of obtaining heat. But when they had totally abolished smoke from industrial establishments, there would still remain the cloud of smoke from private dwelling-houses. When the aid of the legislature was sought in this direction it was asserted that no really available means existed by which this class of smoke could be got rid of. Statements to this effect were entirely groundless. The late Sir William Siemens had demonstrated long ago that not one, but half a dozen means were available for the prevention of domestic smoke. This was said 16 years ago. To-day there were 50,000 different kinds of smokeless grates in use in London. He could say from his own experience that it was not the means, but the will to use those means, that was wanting in order to check the smoke from domestic chimneys.

The MAYOR of ROCHDALE, who seconded the motion, said that numbers of manufacturers had spent thousands of pounds in trying to prevent smoke. He himself had been trying for 40 years, and had not succeeded yet. He attributed the difficulty of smoke preventien to the varying conditions under which furnaces were used. Sometimes there was 1 furnace to 1 chimney; sometimes there were 10 furnaces to 1 chimney. And although a furnace might not create smoke when used under the most favourable conditions, how could one prevent its evolving smoke when extra pressure was suddenly required.

Mr. HORSFALL said that practical experience convinced him that the tests which had already been made were not sufficient. Manufacturers could not have confidence in tests made in a chemist's laboratory; they wanted tests carried on upon a commercial scale. Moreover, they wanted not two or three tests of appliances, but a perfect cloud of evidence in support of the assertions made by the makers of such appliances.

The LORD MAYOR having responded to the vote of thanks, the meeting terminated.

THE WORSHIPFUL COMPANY OF PLUMBERS.

A QUARTERLY court of this Company was held on April 25, 1890, at the Guildhall, the Master (Mr. W. H. BISHOP) presiding.

The CHAIRMAN reported the meetings which had been held during the quarter in various parts of the country, in connection with the registration scheme initiated by the Company. The meetings have been held at Glasgow, Nottingham, Liverpool, Bristol, Newcastle-on-Tyne, Cork, Aberdeen, Sheffield, Lincoln, Dundee, Brighton, Leeds, Hull, Plymouth, Dublin, Edinburgh, Manchester, Leicester, and at the Guildhall, the latter having consisted of one meeting of examiners and two meetings of the registration committee. He stated that one of the subjects dealt with in Ireland had been by Dr. Edgar Flinn, F.R.C.S., Examiner in Sanitary Science Royal College of Surgeons, Ireland, on the registration of plumbers viewed in relation to public health. Dr. Flinn had reviewed and recommended the system advocated by the Company. They had had a number of communications from different parts of the country on the subject of registration, and respecting plumbing classes in different districts. The districts now forming plumbing classes were very numerous, and it was remarkable that nearly all of them were preparing for a second course—a higher grade—being anxious to put men forward and to prepare their students for that sanitary instruction which they all recognized as being highly necessary. Information of this kind came to the Company from nearly all sides with the request that they would render assistance at the outset. A subject that was being discussed in many places was the necessity for a special course of instruction for masters, it being recognized that masters should possess a higher degree of scientific knowledge.

The CLERK read the result of the examinations for registration during the quarter, showing that examinations had been held at Bristol, Glasgow, Manchester, Brighton, Dublin, and Leicester. The lowest passed in any of the examinations was 15 per cent. of the candidates, and the highest 70 per cent., the average being 45·8 per cent. During the quarter applications for registration had been dealt with as follows:—Masters 444, journeymen 849, making a total of 1,293. He reported that a letter had been received from one of the trustees of the Townsend Schools, of which the Baroness Burdett Coutts was a trustee, thanking the Company for the prizes they had offered for the competition of the students who attended the night classes in plumbing at the institution. He also reported that the district council of Dumfries had succeeded in inducing the railway companies in that district to reduce the fares for apprentices attending the plumbing classes. He further reported that some European and some native residents in Rangoon had adopted the English system of sanitation, and had sent a requisition to England for a number of registered plumbers to be sent out. Several had already gone.

Sir PHILIP MAGNUS said since the last meeting of the court some of the members, with the assistance of expert advisers, had drawn up a graded syllabus of instruction, especially adapted to apprentices in the plumbing trade. It is thought very advisable to catch these young lads at the time when they are apprentices, and to secure for them, if possible, a continuous course of study occupying three or four years, which shall continue simultaneously with their apprenticeship. This course of instruction, which is recommended to the different centres in which technical and science classes are being held, is intended to consist of three parts, a preliminary course, an intermediary course, and a final course; and the syllabus that has been drawn up is not so much a syllabus of examination as it is a syllabus of instruction intended to guide the teachers of these classes. He pointed out that there are many science classes throughout the country in which the principles of physics, chemistry, and mechanics are taught without reference to their applications to any particular trade. The object of those who had prepared the Company's syllabus had been to connect continuous instruction in the principles of science with the practice of plumbing. Consequently, the preliminary course took up those parts of the different branches of science which had a direct bearing upon the plumbing trade, such as geometry, drawing, mechanics, hydrostatics, heat, chemistry, and even workshop architecture. It was expected that this preliminary course would occupy one or two years, according to the previous education of the apprentice. It would be followed by a somewhat higher course in practically the same subjects carried a little further; and this would be followed by a final course introducing some of the more advanced parts of hydraulics, building construction, and the principles of sanitation and of general plumbing; and it was understood that in order, in the future, that a master might be able to obtain a certificate, he should be required to have passed this final examination including those parts of the subject which involve a higher knowledge of science, and would indicate his general intelligence and capability of dealing with large problems. Those who had prepared this theoretical course of instruction had been very desirous that the student should go through at the same time a graded course of practical instruction in the workshop, and that this practical instruction should always be tested year by year, so as to ascertain that the pupil has made fair progress. This would be carried on simultaneously with the lessons to be given in those various subjects. He said it was very important to bear in mind that the systematic study of all the subjects in the syllabus which has been drawn up would not be found to be possible for ordinary apprentices; but what is expected was that each subject would be studied not with the view of passing an examination in that subject, but to afford evidence that the candidate had obtained a knowledge of the principles of those different branches of science, and their application to the everyday work of the plumber, especially with

organized, instead of recommending apprentices to attend ordinary science classes in the several subjects, and present themselves for such examination as might have been instituted by other bodies. He said he believed if funds were forthcoming, by means of which assistance could be afforded to the different centres at which the classes were likely to be organized, a very important step would be made towards furthering that improvement in the knowledge and practice of sanitary plumbing which is so very much desired.

Mr. JOHN SMEATON said he was sure it must be with pleasure that the court saw the Marylebone vestry moving in the matter. Regulations respecting house drainage had been drawn up by Mr. Tomkins, the surveyor, and issued by order of the vestry, providing among other things that "an interceptor trap shall be placed in the drains on the premises as near as possible to the sewer, and beyond all branch connections, and an inspection chamber provided. Provision shall also be made for the circulation of air through the main drain and soil-pipes in such manner as shall be approved by the vestry's surveyor." Reference was also made in the regulations to the subject of inlets, and it drew the attention of tradesmen especially to bell-traps, and said that they should not be fixed in any house. The regulations were drawn up with thought and skill, and he (the speaker) thought it was the intention of the Marylebone vestry to work in harmony with the efforts of the Plumbers' Company, as far as practicable, in reference to the Metropolis Management Act. Mr. Smeaton also drew attention to the regulations issued by the Wandsworth District Board of Works as to the water supply and drainage of new houses.

NOTES FROM THE NORTH.

(From our own Correspondent.)

THE average death-rate of Newcastle, though it exhibits signs of improvement, cannot yet be regarded as satisfactory. For the week ending May 31, the record was 26 in the 1,000, in contrast with that of London, 16 in the 1,000 for the same date. A special meeting of the council has been called to investigate the matter.

The trying influences to which medical officers are often exposed is illustrated in the case of Dr. Smith, who is now dangerously ill of erysipelas, contracted in his attendance on a patient at the hospital for infectious diseases near Newcastle, who had been removed from the infirmary in that city.

On June 4 a sub-committee of the Newcastle Town Council met to consider the inquiries they have made relative to the housing of the poor in other large towns. It was elicited from London, that although many large blocks of dwellings have been erected, the class of persons for whom they were intended had not availed themselves of them; in one large building at the east end of London it was stated that 50 per cent. of the rooms were empty. To those who are aware of the great demand that exists for house accommodation amongst the labouring classes in London, such a statement may appear extraordinary, but the key-note may be supplied from the fact that in many cases the rents imposed for such accommodation are prohibitive to the poorer classes, without taking into consideration the restrictive prohibitions often imposed. In Liverpool the authorities expressed themselves satisfied with the results of their efforts there, as also did those at Dublin. It was finally resolved to consider this important question more fully at a future meeting.

Notwithstanding the efforts of the authorities, the water at Spital Tongues near Newcastle is not yet regarded as suitable for drinking purposes.

In consequence of the decrease of water in the reservoirs for Newcastle, Alderman Potter stated at a

for manufacturing purposes only.

NOTES IN THE SOUTH AND WEST.

(From our own Correspondent.)

THE drainage system of Portsmouth, which cost over a quarter of a million sterling, has occasioned the local authorities a good deal of trouble and anxiety from time to time. Owing to a considerable portion of the borough lying below the level of the sea, it has been found next to impossible to prevent the occasional flooding of cellars, which invariably gives rise to the most bitter complaints on the part of the business community; but the latest discovery is still more serious. It has been ascertained that the sea is making steady but sure inroads on the shore near Fort Cumberland, where are situate the elaborate pumping station and outfall works erected some years ago from the plans of Sir Frederick Bramwell. It was at first thought that an expenditure of £6,650 would be necessary in order to prevent further encroachments of the sea, but Mr. Harris, assistant to Sir Frederick Bramwell, who has since been called in, states that the danger can be obviated by a comparatively small outlay.

The medical officer of health at Penzance has been making a systematic and instructive tour of the local "slums," and his report to the Local Town Council on the subject of the housing of the poorer classes in the borough, accompanied as it is by a list of houses, in his opinion, unfit for habitation, should do a great deal of good. Mr. Millett has arrived at the conclusion that more depends upon the habits of the people than upon anything else in regard to the condition of their dwellings, as in many cases two houses were found side by side, one of which was neat and clean, while the other was foul and unhealthy from absolute neglect. He was also struck by the remarkable absence of glass from the windows of the poorer dwellings, and the unconcern displayed by the inhabitants with regard to the deficiency.

A new sewerage scheme for Newport, Isle of Wight, has lately been under the consideration of the Local Government Board, who declined to sanction the lime process of treating the sewage, as was at first proposed by the local authorities. At a recent meeting of the Town Council it was resolved, on the recommendation of the Sanitary Committee, that Mr. Baldwin Latham's scheme for the treatment of the sewage by a mixture of lime and sulphate of alumina should be adopted. It is anticipated that the maximum amount required to be borrowed for the carrying out of the works will not exceed £16,000, an outlay which is, of course, condemned in some quarters as extravagant.

Some years ago a formidable anti-drainage party existed in a large town in the South of England under the somewhat suggestive appellation of "The Muckabites," who are now regarded as the most ridiculous figures in local history. A similarly reactionary party is now endeavouring to make its influence felt at Chichester, but owing to the steady increase in the death-rate, and the prevalence of zymotic diseases in the cathedral city, a majority of the Council has at length been impressed with the necessity of providing a reasonable drainage system. The anti-drainers have now assumed an attitude of irreconcileability. The great Napoleon once declared, "Water, air, and cleanliness are the chief articles in my pharmacopœia." Chichester anti-drainers contend that as the inhabitants of Chichester have pure water, freedom from contagion must follow as a matter of course. They have consequently spurned the idea of arbitration by the Duke of Richmond, as suggested by the drainage leaders, and intend to pursue their opposition to sanitary reform to the bitter end.

The Liskeard medical officer of health has called attention to a terrible state of things existing in the district

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of Callington. In November last typhoid fever broke out and spread rapidly, thanks to "closets unventilated and without water service, damp, badly built, over-crowded, untrapped, badly-smelling gratings in the streets, and an air putrid from privies, pig-sties, and slops." Bye-laws to deal with this dreadful condition of things are now awaiting confirmation by the Local Government Board. At present some of the houses in Callington are built back to back, involving deficient light and ventilation, and imperfect sanitary arrangements. A considerable number of houses have no sanitary accommodation whatever, the excretions being kept indoors until night, and then flung on to a dung heap, or a grating in the street.

Ample evidence is forthcoming of an awakening on the part of local authorities to a sense of their responsibilities in regard to sanitation. At Horsham it is proposed to borrow a sum of £400 for works of sewage disposal; at Midhurst an outlay of £700 is proposed for the same purpose; the Ilfracombe Local Board are seeking permission to borrow £2,500 for works of water supply, and £1,000 for works of sewerage; and the local body at Penzance have taken in hand the question of the habitations of the poor. On the other hand, affairs at Falmouth remain *in statu quo*, the Local Government Board having declined to sanction the half-hearted measures of sanitary reform which it has been proposed to take in consequence, as it is alleged, of the already heavy burdens which the ratepayers have to bear. The Local Government Board recommend the carrying out of a comprehensive system of drainage which would cost between £10,000 to £20,000. Delay has also occurred in the erection of the Dartmouth Infectious Diseases Hospital, an institution urgently needed, owing to unfortunate differences of opinion among those concerned as to the selection of a suitable site.

NATIONAL HEALTH SOCIETY.

On March 19 Mr. Owen Lankester, M.R.C.S., delivered the fourth of his series of lectures on "Domestic and Personal Hygiene," at University College School, Avenue Road, N. The subject of the lecture was

"Occupation and Exercise."

Mr. Lankester passed in review the various professions and callings of men and women, and showed the effect of each on the health; of the three learned professions, the clerical is the longest lived, this was attributed to the absence of that competition which is so harassing in both the legal and medical professions. Mr. Lankester advocated throwing open the doors of the learned professions to women; he doubted whether many would enter, but he thought every facility should be offered to them. The lecturer then pointed out the evils of long continued standing, especially on women, and strongly urged the adoption of seats for women in our large shops. The effect of under and over-exercise on the muscles was explained and examples were given, Mr. Lankester showing how fat got deposited in the fibres of the muscles, and caused their degeneration. A proper amount of exercise was insisted upon, and the folly of taking unusual exercise or putting a strain on an unused muscle was illustrated by the fact, so often observed, of the rupture of the heart causing death in people of advancing years who run violently to catch a train. Various games and athletic exercises were touched upon by the lecturer, and at the close of the lecture a demonstration of "Musical Calisthenics" was given by Miss Pohler's pupils, under the direction of their master. The young ladies, suitably attired, went through a series of graceful and healthful gymnastics, most admirably calculated to exercise all the muscles of the body.

Also under the auspices of the National Health Society, Dr. J. Schofield delivered, on March 19, a lecture on the

"Training of Children,"

at the house of Lord and Lady Egerton of Tatton. The lecturer began by pointing out that the training of children must be threefold in its object, namely, physical, intellectual, and moral, and then went on to describe how the physical training of girls is more neglected than that of boys. The minds of the former are too often cultivated at the expense of the body. Dr. Schofield said that from twelve to fourteen years is the most critical age of a girl's life, and it is then that she requires the most exercise to develop the soft and yielding bones, which are far more numerous in a child's body than in that of adults. Skipping, rowing, tennis, and rounders he considered were the best exercises for girls, and football ought not to be included as one of their games, for statistics show that comparing it with a disease such as hydrophobia the fatal cases in the former are far more numerous than the latter. Dr. Schofield advocated an all-round education for each child, and advised parents to defer the training of their children in any special branch until they reached the age of about 16 to 18. Mothers should be especially careful not to educate their children for their own vanity in bringing them up as infant prodigies, for early maturity was but shallow maturity. He then observed how the functions of the brain are best developed by the intelligent exercise of the body, and brought his admirable lecture to a close by urging parents to live out in their daily lives the precepts they endeavour to inculcate into the minds of the little ones committed to their charge, and always bear in mind the words of Holy Writ, "Train up a child in the way he should go, and when he is old he will not depart from it." The lecture was fully illustrated by diagrams and microscopic slides.

The annual distribution of medals and certificates to the candidates who successfully passed the examinations of the National Health Society on Domestic and Personal Hygiene, First Aid to the Injured, and Home Nursing, took place at Grosvenor House on Tuesday May 6, when the Duchess of Westminster made the presentation.

The Chair was taken by the President of the Society, the Duke of Westminster. Eight medals and about one hundred certificates were presented to the successful candidates who had attended classes held under the auspices of the Society.

The Chairman (the Duke of Westminster) said it was very satisfactory to find that the Society kept up the efforts which it began about twenty-one years ago, and that they were extending and expanding in various directions for the objects which the Association comprised; and there was no branch connected with sanitary affairs which the National Health Society had not laid hold of and grappled with successfully and satisfactorily. This was a very remarkable fact, seeing how much was done by the Society on very slender means, by voluntary effort. The efforts of the Society tended very materially not only to the prolongation of life, but to make life healthier and happier. He mentioned the names of some ladies and gentlemen who had been good enough to support the Society by giving lectures; among them were Miss Homersham and Miss Kenealy for nursing; and on other subjects Dr. Schofield, Dr. William Gell, Mr. Owen Lankester, Mrs. Priestley, &c.

Dr. Schofield dwelt upon the valuable work which the Society was accomplishing by giving ambulance and nursing lectures and instruction in personal and domestic hygiene. In referring to the great need which existed for a wide diffusion of this knowledge, he stated that out of five hundred thousand women who died annually in this country only fifty thousand, or one tenth, attained full age. Of the four hundred and fifty thousand who fell short they were led to believe that about two hundred and fifty thousand deaths were due to preventible causes arising from ignorance or carelessness. It was stated that there was a loss to the country of something like 20 millions sterling due to preventible deaths. He referred to the large percentage of infants who owed their death to improper feeding. He contended that a practical knowledge of the laws of personal domestic hygiene should form a part of every woman's education.

Among the other speakers who testified to the valuable work in which the Society is engaged among all classes,

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Treves, F.R.C.S., and Lieut.-Colonel Onslow. The two last named spoke upon the new branch of work undertaken by the Society in the department of physical education, the importance of which could not be overestimated. It was stated that the National Health Society had determined to grant diplomas of proficiency in the art and science of physical education to such teachers of gymnastics, calisthenics, and physical exercises as have fulfilled the necessary curriculum, and have passed the required examinations. The Society hopes, by the institution of this diploma, to encourage the development of physical education in this country; to render such training precise, effectual, and scientific; to protect the public on the one hand from incompetent teachers, and to establish on the other the position of such instructors as are fully qualified.

SANITARY MATTERS IN SCOTLAND.

(From our own Correspondent.)

There has just been printed a pamphlet by Harvey Littlejohn, M.A., M B., C.M., &c., entitled "Ten Years' Compulsory Notification of Infectious Disease in Edinburgh." That city secured compulsory notification by the 208th clause of the Edinburgh Police Act of 1879. The diseases specified are cholera, typhus fever, typhoid fever, diphtheria, small-pox, scarlet fever, and measles, and which must be reported by every medical practitioner practising within the burgh to the medical officer of health within 24 hours of the same coming to his knowledge. If the medical officer of health finds on inquiry that the diagnosis of the disease by the practitioner has been correct, the latter is paid the sum of 2s. 6d. for each case reported and verified. Practitioners are furnished with printed forms of certificates and stamped envelopes for transmission. There is no responsibility for reporting laid on the shoulders of the householder.

Ten years of notification in Edinburgh.

Dr. Littlejohn says that the medical men fulfil their duty with almost unexceptional correctness and punctuality, and since the passing of the Act there has been no case of prosecution. The forms for notification are so designed that they serve also for removal to hospital. The want of this information is felt in connection with the forms supplied for the new Notification Act. The cases are all shown on monthly maps hung up in a prominent position in the office, so that any practitioner may inspect the progress of disease in a particular locality. Special distinctive signs are used to show the various diseases. Fees are paid in January and July, each practitioner being informed that on sending or calling at the Council Chambers on any subsequent date he will receive the amount due, or the account may be passed through a bank. This method has been found to work very satisfactorily.

The following table shows the intimations of the six diseases from the years 1880 to 1889:—

Disease.	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	Total.
Typhus . .	18	23	45	50	42	58	12	38	23	46	355
Typhoid . .	336	413	639	346	591	589	224	332	245	320	4,035
Diphtheria .	172	171	217	214	183	149	212	256	245	354	2,173
Small-pox .	5	4	1	0	1	12	26	0	1	0	50
Scarlatina .	1,897	1,904	2,161	1,817	1,423	1,087	1,306	2,587	618	1,255	16,055
Measles . .	3,216	684	4,100	2,984	2,476	958	5,833	2,369	3,836	3,064	29,520
Total .	5,644	3,199	7,163	5,411	4,716	2,853	7,613	5,582	4,968	5,039	52,188

The fees paid for the total intimations during these 10 years amounted to £6,523 10s., which certainly does not look so large a sum as might have been expected in a city like Edinburgh. Great difficulty has been felt in withstanding the notification of this disease, and Dr. Littlejohn confesses that "in a large town with a susceptible population and hospital accommodation necessarily limited, when compared with the requirements of an outbreak of measles, notification as a means of checking the disease is practically useless." At the same time, that for this disease there ought not only be compulsory notification, but compulsory removal to hospital. In charts appended are shown how, in one month, there are, say, only 7 cases notified, and in a month or two the number rises to almost 1,500. The contention is, that if the first few cases were either removed to hospital or placed under strict isolation, such epidemics would be avoided. It is felt that no practical benefit has as yet resulted by the notification of this disease, nor by closing of the schools during epidemics.

The typhoid fever cases caused a mortality of 468 during the 10 years, being a percentage of deaths to intimations of 11·5. During the last four years, there has been a decrease in the number of cases, which is no doubt due to the notification and isolation in a large number of cases, and a thorough inspection of the sanitary arrangements in all the houses where a case has occurred.

The 2,173 cases of diphtheria caused 497 deaths, giving a percentage of 22·8 deaths to intimations. There has been an increase in this disease, "a fact which points to its being due to other causes than defective sanitary appliances, for in the disease *par excellence* by which the benefits of good sanitary arrangements are proved, viz. typhoid fever, there has been a marked diminution in the number of cases during the last four years as compared with previous ones, while the cases of diphtheria show a very considerable increase. This all points to some other factors being at work in the causation of diphtheria, accounting for the increase in the number of cases and a corresponding rise in the mortality.

The 16,055 intimations of scarlet fever produced 1,104 deaths, being a percentage of 6·8 to the number of intimations. During the year 1887 there was an epidemic in connection with a milk supply. The rate of mortality has fallen from 17·8 in 1880 to 2·3 in 1889, which is very satisfactory, but the want of sufficient hospital accommodation and compulsory powers of removal and isolation are felt in connection with this disease. "What is the good," he asks, "of removing 20 cases from a street in a poor quarter of the town, if you leave one, which of itself is sufficient to cause an epidemic? In small houses there cannot possibly be isolation; the other children must go out and play, and to do this they must pass up and down the common stair; the father must also go to his work. Often too in our system of flats, a case in a house on the ground-floor spreads infection up through the whole tenement, and, as in some instance brought under our notice, not a family in such a tenement has escaped."

The typhus intimations were 355, producing 102 deaths, or a percentage of 28·7. Both the number of cases and the mortality rate have decreased during the past four years. There are certain blocks of old buildings in the old town which appear to be the favourite breeding places for typhus.

There were fifty cases of small-pox during the ten

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years, causing four deaths. Both in this disease and in that of typhus the great advantage of notification has been experienced. Epidemics of small-pox should now be rendered impossible where prompt notification, removal to hospital, disinfection, &c., have been duly carried out.

In the concluding portion of the pamphlet, which extends to 28 pages and has three charts appended, Dr. Littlejohn deals with the seasonal features of the 4 diseases in an interesting and able manner. Measles has its maximum in April, and minimum in September; typhoid maximum in October, and minimum in spring or first portion of summer. Scarlet fever has somewhat the same periods as typhoid.

The largest number of the cases of diphtheria occurred in November and December. "It is a curious fact, as shown on these charts, that the mortality curve of diphtheria coincides closely with the intimation curve of typhoid, and the mortality curve of typhoid with the intimation curve of diphtheria for the months of October, November, December, and January." Notification has been found to be of great advantage in Edinburgh in informing the authorities of the amount and kind of infectious disease in the city, and nipping in the buds several outbreaks due to milk contamination. The result as a whole has been satisfactory, more especially in regard to the reduction of the zymotic death-rate, the total average rate of which was for 1870–1879 3·33 per 1,000, and for 1880–1889, 1·82 per 1,000. The scarlet fever death-rates for the same period were ·96 and ·45 per 1,000 respectively.

Scotch county councils.

The elections throughout Scotland took place on 4th February 1890. Provisional councils have been appointing committees and making the necessary preliminary arrangements, such as dividing the county into districts, &c. On the 31st May the officers of the Parochial Board as local authority are transferred as from that date to the county council. One of the first duties the council have to undertake are the fixing on the emoluments and number of medical officers and sanitary inspectors requiring to be appointed for each county. These matters have already been discussed to a considerable extent by the provisional councils, with the result that numerous difficulties and doubts have been expressed as to the following points:—(1) Whether the services of medical officers and sanitary inspectors should be regularly available in any one or more of the districts; (2) the officers and nature and tenure of their appointments and their emoluments. These matters have caused anxious discussions and correspondence with the Board of Supervision. The latter has advised that the existing staff of sanitary inspectors in the parishes cannot be removed from office. The sanitary inspectors under the Public Health Act have been appointed by the local authority, but they could be removed only by the Board of Supervision. The board have held that this amounts to an appointment *ad vitam aut culpam*, and they have only exercised the power conferred upon them by the statute when it has been established to their satisfaction that a sanitary inspector was unfit or incompetent, or had failed to discharge the duties of his office. The appointment of the medical officer on the other hand has been one from year to year. If he receives due notice that his services are to be dispensed with he has no claim for compensation. On the other hand, the council may distribute the business among existing officers as they think just or abolish any office they may deem unnecessary, the officer receiving the usual compensation. The board is of opinion that there are no powers conferred on them by the Act by which they could remove the existing officers, except on the ground that they are unfit or incompetent. "It will become their duty to consider hereafter, when the districts have been defined and the committee appointed, whether the services of any existing officer can be dispensed with as unnecessary, and whether, on the fact being established to their satisfaction, they have power under the Act either to remove him or to consent to his removal."

This is most disappointing, unsatisfactory, and indefinite. It was the hope of all those interested in public health that the administration of public health in our counties would be placed on a better footing by the appointment of fully-qualified officers. The secretary of the Board of Supervision appears to think that the late parochial local authorities officers have been fit or competent. Waiving this point, they should be compensated and removed, so that the councils may have a free hand in administering the local government and public health Acts in an efficient, thorough, and energetic manner.

Milk epidemic in Forfar.

An outbreak of fever, due to milk from a dairy where milk was contaminated by drain air, has been engaging the serious attention of the local authority of Forfar, who have received something of the character of a reprimand from the Board of Supervision. According to the Report of Dr. Murray, which has received the approval of Dr. Littlejohn, there were twenty-six sets of customers supplied from the dairy, and in 23 houses there had been various illnesses; no less than 15 families involving 36 persons suffering from fever. The Board of Supervision express the opinion that the local authority and their sanitary inspector were to blame for not having caused the sanitary defects to be removed before the occurrence of the disease.

The committee on public baths and wash-houses of the Glasgow Town Council have appointed William Thomson, engineer, Govan, general superintendent of the baths and wash-houses.

Mr. D. MacLachlan has been appointed council clerk to the Argyll County Council at a salary of £250 per annum, with office rent, outlay and travelling expenses, and a gratuity of £200 for his services in the preparation and bringing into force of the County Council Act.

THE NATIONAL PHYSICAL RECREATION SOCIETY.

Among the societies which are doing much to encourage the development of physical exercise is the National Physical Recreation Society, the objects of which are:—(1.) To assist the working-classes in obtaining, especially during the winter months, physical recreation, consisting of musical drill, vocal marching, calisthenics, gymnastics, and other healthful games and exercises. (2.) To organise and obtain honorary instruction from existing public gymnasia. (3.) To hire or obtain the loan of suitable halls for recreative purposes during the winter months. (4.) To assist, by small grants, in providing suitable apparatus. (5.) To encourage a taste for physical recreation, and promote the physical development of the people, for which purpose we offer a National Challenge Shield for competition between the various affiliated public gymnasia, and also Local Challenge Shields for competition among the voluntary classes in each affiliated district. (6.) To encourage legislation in the direction of providing systematical physical recreation in the public elementary School Board system.

This Society, of which H.R.H. the Prince of Wales is patron, and Mr. H. J. Gladstone, M.P., president, gave its annual display at the Agricultural Hall, Islington, during the week May 26 to 31, and attracted large audiences, who, during the three hours' performance, expressed their appreciation again and again by rounds of applause. The sports opened with parallel bars, horizontal bars, and vaulting horse, in which picked men from seven of the principal metropolitan and provincial athletic and gymnastic societies took part. The Liverpool team, who are the holders of the Society's gold medal and National Challenge Shield, excelled at the parallel bars; and the whole of these performances were of a most creditable character. There were exercises to music with dumb-bells, clubs, and bar-bells by members of the National Physical Recreation Society, faultlessly executed; a quarter-staff competition between members of the gymnastic staff of the army of a very entertaining character, the conquerors in the early bouts having to re-assert

again and again their prowess and skill by engaging in combat with fresh competitors. There were the boy and girl students from the Royal Normal College and Academy of Music for the Blind (Upper Norwood), who went through a charming series of exercises in double drill, eight-in-hand cycling, rope-skipping, and gymnastics with glee singing, &c. But far and away the prettiest spectacle of the evening were the physical exercises by forty girls of Keeton's Road, Bermondsey, trained under the direction of Mrs. Strachan Matthews, assisted by Miss Lingley. They were all apparently under the age of ten, and the precision and grace with which they performed a number of most pleasing evolutions and extension exercises testified to the skill and care with which they had been trained, and evoked tremendous applause. No exhibition could have been prettier, and certainly nothing in the programme was more enjoyed. There were a series of boxing competitions (under the Queensberry rules), which rather marred than added to the general interest and pleasure of an otherwise well organised entertainment. There were some good achievements at the high jump, with and without pole. The closing display, that by the Metropolitan Fire Brigade, directed by Mr. Harman, M.F.B., was of the most realistic description. Smoke and flame were suddenly seen to be issuing from a good representation of a six storied building; the alarm was given, and with creditable promptness fire-engines drawn by powerful horses were on the scene, not, however, before a fire-escape had arrived, and the supposed inmates, one by one, had been rescued from their beds, from what was to all appearances a fiercely burning dwelling. The patron (H.R.H. the Prince of Wales) was present on two evenings, and expressed the great pleasure and interest which the performances had given him.

The Society, we are told, has this year sent out honorary instructors to considerably over a hundred recreation-classes for men, boys, and girls, in the poor districts of London, and in some of the large provincial towns, to the great physical and moral improvement of those instructed.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

"Something attempted, something done."

ASHTON-IN-MAKERFIELD (Population, 11,761).—Mr. Hannah's report for 1889 is one of suggestion and advice as to sanitary improvements, and sets very plainly before the urban sanitary authority the shortcomings of their administration. Much useful work was, however, effected during the year, and, on the whole, 1889 may be regarded with satisfaction as a healthy year. There was no mortality from small-pox, diphtheria, or measles, and only 1 death from enteric fever; yet the deaths of infants were much in excess of those in the preceding year, being at the rate of 176 per 1,000 births. The general death-rate, 18·6 per 1,000, showed an increase. Whooping-cough and croup were particularly rife during the greater portion of the year, causing 10 and 6 deaths respectively. There were also many deaths from bronchitis, pneumonia, and pleurisy. Mr. Hannah refers in this connection to the prejudicial effect of the wet state of "intended" new streets, streets partly made, the surface soil around both old and new property, back streets, and house yards; and he urges the sanitary authority to exercise their powers under the Public Health Act for remedying these unwholesome conditions. In conclusion, Mr. Hannah summarises the improvements still needed as being (1) the ordering, laying out, cleansing, &c., of streets; (2) the removal of stagnant water from the surface in the neighbourhood of dwellings; (3) the levelling and then flagging or asphalting of yards; and (4) the abolition of the remaining old fashioned, unwholesome, and highly objectionable ashpits. The authority have a hospital in readiness, and have wisely adopted the Infectious Disease (Notification) Act. But they still need an ambulance.

High infant mortality.

Defective streets.

Improvements needed.

ASTON RURAL (Population, 11,442).—An important feature in the work of 1889 was the activity shown in the extension and improvement of the sewerage system. Dr. Bostock Hill reports that 1,450 yards of sewers were laid in various localities; plans were made, and a loan granted for a scheme for sewering Birches Green; and the ventilation and flushing of existing sewers were most carefully carried out. Thirty-four houses were connected with the sewers, and 27 had defects remedied in connection with their drains and drain-traps. Good work was also carried on as usual in supervising the food supply of the district, with the result that it was found to be of excellent quality, the percentage of adulteration being rather less than 3. There was very little zymotic disease recorded, and at no time was there any approach to an epidemic. The death-rate from the zymotics was 1·13 per 1,000, and from all causes 12·58 per 1,000.

Sewerage.

Adulteration.

BALSALL HEATH (Population, 27,000).—The prevalence of zymotic disease during 1889, though of a mild type, caused a considerable increase in the death-rate, as compared with 1888, yet without raising it above the average of the past 10 years. Dr. Leslie Phillips records a total of 432 deaths, 50 of which were from infectious diseases, and the death-rates respectively amounted to 16·0 and 1·85 per 1,000. He notes with satisfaction the adoption of the Infectious Disease (Notification) Act in November last, though pointing out that the mildness of cases and the frequent absence of characteristic symptoms may prevent its being an absolute check to the spread of disease. This assertion is borne out by the history of an outbreak of scarlet fever, the first, a trivial case, which could not authoritatively be declared to be scarlet fever, becoming the focus for disseminating the disease. Only 2 deaths were due to typhoid, and 4 to diphtheria.

Notification of disease.

HEXHAM (Population, 6,250).—Dr. Jackson's report for 1889 is one continued kindly protest against the insanitary condition of Hexham, and the slow, uncertain progress which has been made towards improvement. A year of comparatively satisfactory statistics enables the health officer to go more closely into the subject, and to renew his recommendations of former years, strengthening his arguments by quotations from the writings of the most eminent of our sanitary reformers. He points out that though the death-rate (17·4 per 1,000) is the lowest on record in the district, this is discounted by a very low birth-rate and an increasing infant mortality; and this latter condition he believes to be largely due to a want of proper cleanliness in the district where the mortality is excessive, and to certain classes living in conditions very much below the requirements of health. There are, in Dr. Jackson's opinion, six sanitary blots in Hexham: the prevalence of middens and privies; of unpaved, undrained premises; dilapidated houses; the absence of wash-houses in tenemented property; no means of isolation; and an unsatisfactory condition of the outlet for and disposal of sewage. Against these he inveighs in unmeasured terms, and cites numerous cases as showing the necessity for a prompt remedy. An example of the dilatory method of effecting sanitary improvements may be found in the fact that out of a list of about 82 nuisances upon which, in conjunction with the inspector, Dr. Jackson made certain recommendations twelve months ago, only 20 had been attended to at the end of the year.

Increasing infant mortality.

Want of cleanliness.

Sanitary needs.

LEEK (Population, 13,778).—Mr. J. J. Ritchie draws attention to the large amount of work which is done to maintain the good sanitary condition of Leek, and it is a

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satisfaction to know that to a very great extent the general public are ready to recognize the importance of the work, and willing to co-operate in its accomplishment. The mortality returns for 1889 show an improvement upon those of 1888, as did those also on the previous year. The total number of deaths was 260—126 males and 134 females—against 267 in 1888: the rate of mortality was 18·8 per 1,000 of the living as compared with 19·6 in 1888, and the mean age at death of each deceased person has increased from 36·6 years in 1888 to 38·5 in 1889. These figures all show an upward tendency in the condition of the public health, and so far are satisfactory. The only approach to an epidemic during the year was one of whooping-cough, from which 8 deaths resulted. The death-rate from zymotic diseases is low in Leek as compared with the country generally—the figures being in Leek ·61 in 1,000, in England and Wales 2·35. One chief cause of this immunity has doubtless been the voluntary notification of infectious disease, which has been so praiseworthily carried out by the medical men of the town for the last 17 years.

Diphtheria prevalence.

POOLE (Population, 13,940).—The interest of Mr. Herbert A. Lawton's report for 1889 is centred in an account of the prevalence of diphtheria, which, though not amounting to an epidemic, yet caused the large number of 13 out of a total of 24 zymotic deaths. The first patient contracted the disease from an infective person, coming from London; the others were mainly associated with insanitary conditions, though the later cases seem to have been due to personal infection. The steps taken to prevent the spread of the disease were: removal of sanitary defects, closing of a polluted well, disinfection of premises, and closing and disinfection of the British Infant School. In addition, all the public elementary and many of the dame schools were visited and inspected. The masters and mistresses were directed to send home any child suffering from sore throat or coming from any house where there was a case of sore throat. It is noteworthy that the only 2 fatal cases of typhoid fever were found on the same premises as cases of diphtheria. The general work of the year was efficiently performed, but, as is so often the case, the sanitary officers are greatly handicapped by the want of proper bye-laws. Mr. Lawton reports that the sewage disposal scheme progresses very slowly.

Need of bye-laws.

Sewage disposal.

RADCLIFFE (Population, 20,000).—In a very favourable report on the year 1889, Dr. William Sellers, jun., calls attention to the progressive diminution of the death-rates since 1884, the last, 16·4 per 1,000, being the lowest yet recorded. It is only reasonable to attribute some share of the decrease to the sanitary improvements which are constantly being effected. Both 1888 and 1889 were marked by a severe epidemic of measles, and Dr. Sellers estimates that from September in the one year to April in the next, there must have been 300 or 400 cases in the district. He calls special attention to the five deaths from typhoid fever, as necessarily representing a considerable number of cases and a corresponding amount of insanitary conditions. A scheme for the disposal of sewage is being carried out, but some more satisfactory method of excrement removal from ashpits is urgently needed, and should next engage the attention of the authority. The routine work appears to have been satisfactorily performed.

Measles epidemic.

Sewage works.

READING (Population, 60,654).—Mr. Ashby's report for 1889 proves that year to have been very favourable as regards public health in Reading, and one, therefore, in which it was possible to carry out good sanitary work. The small-pox hospital, which was not once called into requisition, was thoroughly repaired, its drainage improved, and a new mortuary and ambulance shed provided. An ambulance cab for scarlet fever patients was purchased, though only one patient was conveyed to the hospital during last year, and a water-main and hydrant were ordered to be fixed so as to command both buildings in the event of fire. Numerous experiments were made with a view to test the efficiency of the disinfecting apparatus, and Mr. Ashby came to the conclusion that "undue weight has been attached to the necessity of using steam at high pressure, and that quite as good, and in some respects better, results may be derived from the employment of steam without pressure, or at most occasionally assisted by an intermittent pressure of from two to five pounds to the square inch." With the exception of 1888 there were fewer notifications of disease than in any year since the passing of the Act of 1881. The question of improving the waterworks occupied much attention during the year. The whole report bears evidence to a steadily-progressing improvement in the health and sanitary condition of the borough, the best proof of this being, perhaps, the diminishing mortality from phthisis, and the non-prevalence of epidemic diseases. The death-rate for 1889 was 13·6 per 1,000, or 3·4 below the ten years' average.

Hospital.

Ambulance.

Disinfecting experiments.

Waterworks.

Phthisis.

SOUTH ROSLAND (Population, 8,048).—Although the statistics for 1889 are rather favourable, the death-rate, 16·39, showing a satisfactory improvement on the average, Dr. Smailes is by no means satisfied to leave matters as they are, and points to many existing defects as demanding immediate attention. These relate chiefly to drainage, but a very important matter to which he draws special attention is the crowded condition of the public graveyard. Dr. Smailes is of opinion that the turning over of earth in which bodies lie so closely together is decidedly prejudicial to the public health. He recommends the Board to take this subject into consideration both in the interests of health and common decency, and that the burial places of the dead may be without reproach. The sewage-filtration works were greatly improved at considerable cost during the year. The scavenging was carried out at the small cost of £32.

Crowded burial-ground.

Sewage works.

Scavening.

SUTTON COLDFIELD (Population, 9,100).—Dr. Bostock Hill has been able to report, year by year, a constant progress in sanitary improvement, and 1889 is no exception to the rule. He has no hesitation in saying that never was the borough in a better sanitary state. There were no deaths from small-pox, scarlet fever, typhoid fever, measles, or diphtheria during the year, and the rate of mortality (11·3 per 1,000) was almost as low as is compatible with the average duration of human life. That this is no mere accident is shown by the fact that this is the second year during which statistics have been almost equally favourable. As regards sanitary improvement the same steps have been diligently taken as heretofore. Sewers have been made and houses re-drained; water supplies have been carefully tested, and, when necessary and possible, purer supplies substituted, with the result that a further and marked improvement in sanitary condition is again reported.

Low death-rate.

TEIGNMOUTH (Population, 7,338).—The increasing popularity of this town as a health resort leads Dr. F. C. H. Piggott to take his arguments for sanitary reforms from a business point of view, and thus the more probably secure the attention of his authority. As he justly remarks, an inadequate water supply would seriously prejudice the reputation of the town, and this, unless immediate steps are taken to supplement present resources, would certainly result from an increased population. A proper hospital for the reception of cases of infectious disease is also a necessity, and one which must be faced without delay, as a logical consequence of the adoption of the Notification Act. The sewer outfall, which is above low-water mark, and causes at times a decided nuisance, is also a matter requiring serious attention,

Water supply.

Hospital needed.

Sewer outfall.

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Disinfector needed.

and there is need, if only from economic motives, for an apparatus for the disinfection of bedding and clothing. Dr. Piggott makes out a good case, and the experience of the past year serves to strengthen it. There was a scarcity of water, amounting almost to actual privation in parts of the district in the summer. An outbreak of small-pox extended to 2 other cases, owing to insufficient isolation; while, through the burning of infected bedding, &c., considerable sums had to be paid to owners by way of compensation. The zymotic death-rate of the year was high, but this is accounted for by a very severe epidemic of measles, which resulted in 17 deaths. The general death-rate, 16·6 per 1,000, was just above the decennial average.

TODMORDEN (Population, 25,580).—Mr. Thorp's report is mainly statistical, but his tables of comparative rates afford a very good idea of the progress made during the past 12 years. Fluctuating from year to year, the death-rate has fallen from 21·7 per 1,000 in 1878 to 17·9 in 1889, which is practically the same as that for the previous year. From a sanitary point of view the returns of 1889 are remarkable for the absence of enteric fever, a circumstance without parallel in Mr. Thorp's previous experience of the district. Owing to an epidemic of measles in the early part of the year it was found necessary to close the schools in Shade and Walsden. There were 34 deaths from this disease registered during the year, 30 of which occurred in the early part of the first quarter. Mr. Thorp hopes for good results from the adoption of compulsory notification, and looks for the co-operation of the authorities of the day and Sunday schools, in excluding from school attendance all scholars from infected houses until such time as they can produce a medical certificate of freedom from infection.

Enteric fever absent.

Measles: school-closing.

Compulsory notification.

SURVEYORS' AND SANITARY INSPECTORS' REPORTS.

ASTON RURAL: SUTTON COLDFIELD URBAN (Populations, 11,442; 9,100).—The best criterion of the excellence of Mr. Deeks's work is to be found in the favourable death-rates which are the rule in these districts; but his statements of work done testify to a completeness in all respects which must have a salutary influence in his districts. It is difficult to particularize any one branch as receiving special attention, but due importance was given to all matters of drainage, of water supply, and of food, and these necessarily bulk most largely in the returns. Very few cases of overcrowding are reported, and only 3 houses (in the rural district) were closed as unfit for habitation.

GRAVESEND (Population, 24,000).—A systematic inspection of dwellings, &c., caused a large increase in the work carried out by Mr. A. H. Lukes during 1889. It resulted in the discovery of many nuisances, most of which were promptly abated; but in 8 cases it was found necessary to resort to magisterial proceedings. Mr. Lukes reports that, in spite of frequent inspections, some of the courts and alleys are in a deplorable condition, and need to be put in proper repair. Forty-six cases of infectious disease were met with, chiefly scarlet fever and typhoid. A close survey was kept of the few wells still existing on the outskirts of the town, but in only one instance was the water condemned by the analyst. The summary of nuisances, &c., dealt with comprises a total of 4,970 operations.

Inspection of dwellings.

Wells.

HEREFORD (Population, 19,000).—There is considerable activity in sanitary matters in this city, and Mr. James Taylor's report for 1889 shows that the work performed has been needed. Some 1,241 inspections were made during the year by the sanitary inspector, with the result that in 127 instances defects of drainage, &c., were discovered, and steps were taken to ensure the needed alterations and improvements. Defective trapping of drains, defective sink arrangements, whereby sewer air gained access to the insides of the houses, &c., were common forms of nuisance discovered. Offensive water-closets, privies, cesspools, and piggeries were abolished in several instances. The protection of the water supplies and the improvement of dwellings have also received attention. Particular attention seems to have been given to improving the sanitary arrangements of private schools and better class houses. In twenty-two instances alterations in such buildings were secured. It is satisfactory to find it stated in Mr. Taylor's report that "the demand for certificates in this class of property and the willingness to execute the requisite works to obtain them, is steadily on the increase, parents of children in the one case and prospective tenants in the other, frequently making this a condition." There has recently been a very useful raid made in Hereford under the Adulteration Acts, and the fact that six out of twelve samples of milk submitted for analysis proved to be adulterated is a sufficient justification for the action taken in this matter for the protection both of the public and of the honest tradesmen of the city.

Sanitation in schools.

Adulteration.

LEEK (Population, 13,778).—Mr. R. Farrow usually evolves something of interest out of a year's experiences, and in 1889 the novelty is to be found in the results of his inquiries as to space and ventilation in house dwellings in their relation to public health. He shows that in Leek the mean age of people who live in two-roomed houses is 34·9 years, whilst that of people living in houses containing upwards of 3 rooms is 45·3 years. One-third of a person's life is passed in the bed-room, and if these rooms are overcrowded, their occupants breathe impure air, disease in some form is induced, and the weakest perish. A brief table embodies this fact, it being shown that in houses with one bed-room the death-rate during 1889 was 37·43 per 1,000; in houses with two bed-rooms, 18·87 per 1,000; falling to 18·8 and 11·6 in houses with 3 and 4 or more bed-rooms. The routine work of the year seems to have been admirably performed, and a considerable number of nuisances were abated. At the close of the year only 6 notices of nuisances remained on the books as not complied with.

Benefits of proper air-space.

READING (Population, 60,654).—Mr. Roberton's report shows that he has taken cognizance of almost every kind of sanitary defect, and represents a satisfactory year's work. A good sanitary condition is maintained by a system of constant inspection, and the nuisances recorded are, generally speaking, of a minor character, and readily abated. Only 1 patient was removed to the scarlet-fever hospital. One of the first cases under the Act of 1889 for regulating the Sale of Horseflesh is recorded by Mr. Roberton, he having seized 10 cwts. of flesh, which was destroyed by a magistrate's order. Proceedings were subsequently instituted.

Horseflesh.

STROUD RURAL (Population, 28,341).—*No. 1 District.*—Mr. Albert Bailey's summary of work is fairly satisfactory; but there is nothing to call for special comment. He directs attention to the bad state of the main drains at Painswick, and reports the remedying of numerous drainage defects throughout his district. *No. 2 District.*—Mr. John Hall makes special mention of having discovered sewage, from a closet-vault, flowing on the surface of a floor where meat was being slaughtered. More effective provision was made. He also reports that the means to discharge effluent water from the sewage tank at Minchinhampton have been improved, and also the means of water supply from the spring at Avening. Disinfectants have been supplied in cases of infectious disease and visits of inspection were made. Altogether 107 nuisances were abated.

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STROUD URBAN (Population, 9,680).—Mr. W. C. Kirby reports that his visits of inspection throughout the district resulted in the abatement of 110 nuisances; legal proceedings had to be taken in 9 instances. An improved water supply was given to 35 houses, and 16 closets were repaired or reconstructed. Four cases of scarlatina came under notice.

TODMORDEN (Population, 25,580).—The amount of routine work accomplished by Mr. Henry Blackburn during 1889 would appear to have left him little time for exceptional operations. Only 4 houses were inspected, 3 houses were cleansed, and 4 disinfected after the visitation of zymotic disease. Some improvements were effected in the matter of drainage. Eighteen new closets were built for old houses, some of them being to replace others in unsuitable places. A large number of swine were found to be improperly kept in cow-sheds; in one instance legal proceedings had to be instituted. The total number of nuisances abated was 127.

TORQUAY (Population, 25,000).—Mr. C. MacMahon's report shows a considerable advance in all branches of sanitary work, the number of cases dealt with being over 25 per cent. above that of the average for the previous 11 years. In addition to the ordinary house inspections, the sanitary arrangements of 91 villas and lodging-houses were carefully gone through, and, where necessary, remodelled. Most of them were prior to re-letting or selling, or at a doctor's request, and subject to a certificate being granted, which was done in about 50 instances. Some serious defects were met with in the underground and back premises of milk-shops and dairies. In one case the dairy adjoined the wash-house, in which were 2 bell-traps connected directly with an unventilated drain; in another case there were 2 indoor sinks, 2 very foul closets, the water supply from the W.C tank, and no trap or ventilation from the main sewer. A third case disclosed the fact that pigs were kept in the cowshed, which is distinctly against the regulations. Mr. MacMahon also surveyed 85 new buildings before occupation, and the major part of the number were satisfactory after the first examination. A few, however, were far from right in construction and dryness. A case of the latter occurred in which the walls were streaming, the plaster soft, and the place incomplete, yet the builder found a tenant, and the latter was in occupation at the time of the inspector's visit. Legal action having been threatened, the tenant soon left, and the house is still unfit and unpassed. A short abstract of the work done during the past 12 years shows that a total of 2,923 houses, or about three-fourths of the number in the district, have been inspected and put into good sanitary condition.

Certification of houses.

Defects in dairies.

WALSALL (Population, 68,857).—Messrs. Stephens and Harries present as usual a very thorough report of the work done in the past year. Every branch has received unremitting attention, no effort being spared to keep the town in the best possible sanitary condition. A house-to-house inspection in some of the lower class districts resulted in the closing of 63 dwellings as unfit for habitation, and the repair of 31 others. There were 19 cases of overcrowding which had to be dealt with. The close supervision kept over trade premises has had a most satisfactory result in ensuring their lime-washing and cleansing at least twice a year, and the abolition of all serious structural defects. One milk-shop was closed in consequence of an outbreak of scarlet fever in the house, and a milch cow was ordered to be destroyed, being diseased. Infectious diseases were not seriously prevalent, but the work in connection therewith was well performed, cases being vigilantly searched out, and a free use made of disinfectants. The percentage of adulteration in Walsall appears to be small, 3 only out of 125 samples collected being reported of doubtful quality. In collecting the samples of food, &c.. the inspectors tested the tradesmen in various ways, frequently making their purchases through strangers.

Supervision of dwellings.

Trade premises.

Adulteration.

WIGAN (Population, 50,000).—Mr. J. R. Leggatt's first annual report is a record of useful and painstaking endeavour to suppress recurring nuisances, and to maintain a proper sanitary condition throughout the borough. The large number of 184 notices served related to the keeping of swine, poultry, pigeons, &c., in too close proximity to dwellings. This class of nuisance has taken up a great deal of time, several visits having to be paid in each case to urge the abatement, and Mr. Leggatt had to adopt a more stringent method in one or two instances, and summoned the offending parties. Having withstood great opposition, he now finds his notices much better respected. For every nuisance found two visits have to be made, and taking the notices served, viz. 772, together with the many visits paid where swine and poultry are kept, no fewer than 1,600 visits were made between March 1889 and March 1890. A daily inspection was made of the market, but only 12 seizures of bad meat or fish had to be made. Unfortunately Mr. Leggatt's efforts to bring down punishment on the heads of the offenders were in some instances rendered nugatory by the informality of his appointment (*vide* SANITARY RECORD for July 15, 1889; page 11).

Nuisances.

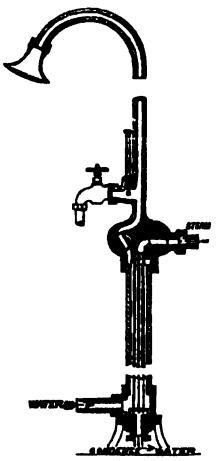
Market.

ILLUSTRATED SANITARY PATENTS.

8,880. (1889.) IMPROVEMENTS RELATING TO SHOWER BATHS. HEINRICH SCHAFFSTALDT, of 24, Bahnhofstrasse, Giessen, Germany. [6d.]

This invention relates to shower baths in which the water is heated to the desired temperature by means of a steam jet, and comprises the improvements hereinafter described.

The steam inlet pipe is connected through a cock with a pipe or pipes leading to the base of the apparatus where it is in connection with a pipe attached to the base by means of a stuffing-box to allow the steam-pipes to expand or contract under different temperatures. The water inlet pipe opens into the lower end of a pipe surrounding the steam-pipes, and of a sufficiently large



diameter to allow the water to pass between and around them. A cock connects the outer pipe with the pipe carrying the rose. This latter pipe is fitted with a thermometer to show the temperature of the water and with a cock to let out the water which remains in the said pipe, and to supply the bath itself with cold or warm water.

When the water-cock is opened and the steam-cock shut cold water will be supplied, but if the steam-

cock be opened the steam will pass through the steam pipes downwards into the air, and will heat the water flowing upwards round the steam pipes.

If it is desired to use the condensed water from the steam instead of conducting the steam into the open air, it may be made to enter a condenser, with which the water supply pipe must be brought in communication in that case.

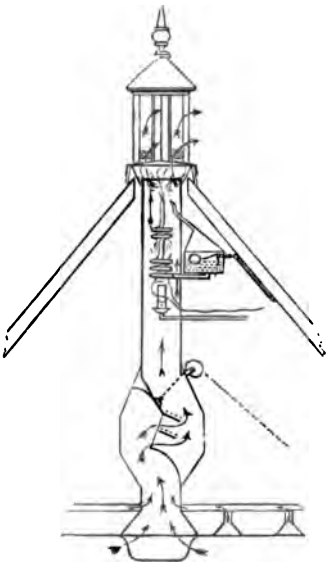
By the use of this apparatus there is no danger of a person being scalded, as sometimes happens with other apparatus if the steam should be turned on too soon, as in the present case the steam would be conducted away; further, the condensed water, which always has an unpleasant odour, does not mix with the water supplying the bath, and the temperature can be regulated instantly to the desired pitch.

The figure represents a vertical section of the apparatus.

Claim.—The apparatus and the various parts thereof as particularly described and illustrated in the above-quoted specification.

9,103. (1889.) IMPROVEMENTS IN ARRANGEMENTS OR APPARATUS FOR VENTILATING SHIPS, HALLS, ROOMS, OR OTHER INTERIORS, AND BATHS, SINKS, AND THE LIKE. DAVID PRENTICE MENZIES, 106, Elliot Street, Glasgow. [8d.]

In carrying out this invention, a ventilating shaft is provided, which may be fitted through the ceiling or roof, or through the wall, or in any other convenient situation in the hall, room, or interior. On top, or at the outer end of this shaft, is mounted a ventilator, preferably that described in a prior specification of the present inventor (No. 4,444 of 1885). In the ventilator, as therein described, the air ascending, or being drawn up the shaft, is allowed to escape through two passages made in the ventilator at right angles to one another. Under the present invention is fitted in the centre or at other part of these cross passages wind deflector plates, which pre-



vent the wind blowing down the shaft and causing down-draught. To cause a strong up-draught a steam-jet arrangement can be fitted in or in connection with the ventilating shaft. This arrangement consists of a coil-pipe, or a small boiler, which has a steam-jet nozzle fitted on, or in connection with it. Water to be converted into steam within the coil or boiler is supplied from a small tank, which is preferably supplied with water from the main. A ball-cock, or float valve is fitted in the cistern for automatically regulating the water supply when supplied from the main.

The coil, or boiler, is heated by gas burners, preferably bunsen burners, at its under side. The burners are by preference ignited by an electric spark, caused by passing an electric current through wires having terminals just above the top of the burners. The coil or boiler may also be heated by a spirit or other lamp. Means are provided for carrying off any steam which may be generated within the tank. The steam generated in the boiler or coil issues out of the nozzle within the ventilating shaft in a jet, which causes a vacuum in the shaft, and so creates an up-draught for drawing off vitiated or foul air from the interior to be ventilated.

The same principle is applied for ventilating baths, sinks, and the like, and in the case of baths the hot water from the coil or boiler may be supplied to the bath.

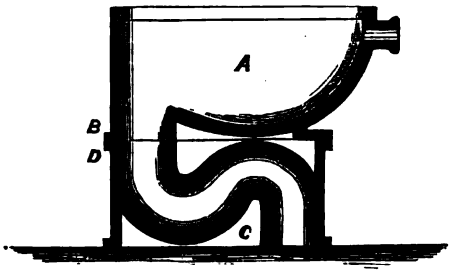
To prevent down-draught at any time, a valve-box, or air-trap, is fitted at the under end of the shaft, having flap traps, which are normally open, but close upon the slightest down-draught.

In some cases the steam coil or boiler arrangement is dispensed with, and the gas jets, or lamp, are used in connection with the shaft for creating an up-draught.

Claim.—The apparatus as fully described; illustrated in the above-quoted specification.

9,305. (1889.) IMPROVEMENTS IN WATER-CLOSET BASINS AND TRAPS AND THE LIKE. EDWARD JOHNS, Armitage Pottery, Rugeley, Stafford. [6d.]

The object of this invention is to provide a combined or boxed-up or enclosed water-closet basin and trap in two parts, capable of being detached from each other so that either part may be replaced without sacrificing the other. This arrangement of water-closet also facilitates its removal from place to place, and is generally an improvement on the basin and trap now in ordinary use, which are formed in one piece.



The figure shows a section of the apparatus when the two parts are placed together.

On the underside of the basin A flanges, lugs, or other suitable projections are formed B, and on the upper part of the trap C suitable flanges, sockets, or other projections are formed D, these latter corresponding with those on the upper part or basin, and so as to engage therewith.

The two parts are joined by means of rubber cement screws, bolts, or in any desirable manner, so that the two pieces of earthenware may be connected or disconnected at will without disturbing the lower or trap portion unless the same be damaged or requires removal from any cause whatever.

Claim.—The construction of water-closet apparatus in two parts as described.

13,236. (1889.) IMPROVEMENTS IN VENTILATING HATS, CAPS, AND OTHER COVERINGS FOR THE HEAD. GEORGE ROBINSON and SAMUEL EDWARDS, 134, Deansgate, Manchester. [6d.]

In carrying out this invention, the leather of the hat is perforated at given intervals, and other perforations are formed through the body of the hat to correspond with those in the leather.

On the outside of the hat these perforations are covered by the usual outside band or ribbon, which is woven of a

more open texture than heretofore, in order to permit the currents of air to pass freely through.

Between the leather of the hat and the body is inserted a strip of wire gauze, woven cane, or other suitable material, which is turned up slightly at the top edge, and thus not only supports the leather away from the hat body, but at the same time has a cushioning effect in rendering the hat more comfortable to the wearer.

In this manner the interior of the hat is effectually ventilated. The improvements are equally applicable to caps and other coverings for the head.

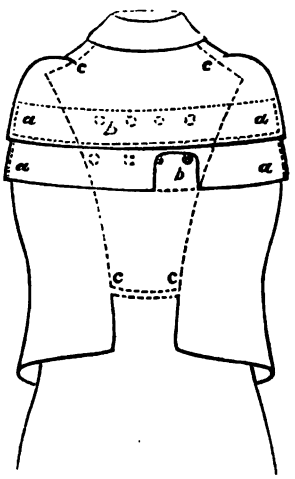
Claim.—The combination of the parts for the purposes described.

3,270. (1890.) AN IMPROVEMENT IN WATERPROOF GARMENTS. LAZARUS MISTOVSKI, 59, Miller Street, Manchester.

The object of this invention is to afford a means for ventilating the back and shoulders of close-fitting waterproof garments for ladies without the use of a loose deep cape.

This invention is applicable to various shapes of waterproof garments such as those known as the "Princess," the "Russian," and others made with wings.

The figure shows the upper portion of the back view of a "Princess" made according to this invention.



Two or more narrow capes (*a*) are employed fitting close around the shoulders, and attached to the garment by their upper edges only.

Underneath these narrow capes a series of ventilating openings (*b*) either with or without metal eyelets are made through the back piece of the garment, behind which is a lining of porous or open woven material as represented by the dotted line (*c*).

Claim.—In ladies' waterproof garments the combination of narrow capes, and ventilating openings beneath them as described.

THE *Trained Nurse* gives the following hints for the application of that useful domestic remedy, a mustard plaster. Never place a cold mustard plaster upon a patient. The shock is like a sudden plunge into cold water. Before you commence to mix the paste be sure you have all the necessary material at hand. First, put a large plate where it can get warm, not hot. Then stir the mustard and flour thoroughly together before you add the water, which should be tepid; stir in enough water to make a paste about the consistency of French mustard. Place your cloth (an old handkerchief is best) on the warm plate, spreading the paste in the middle of it, leaving a margin wide enough to lap well over on all sides. Do not remove paste from the plate until ready to apply. Place a folded cloth between paste and patient's clothing.

LIST OF APPLICATIONS FOR PATENTS

RELATING TO SANITATION.

FROM MAY 3 TO MAY 27, 1890.

[*This List is specially compiled for the* SANITARY RECORD *by Messrs. Rayner & Cassell, Patent Agents, 37, Chancery Lane, Holborn, from whom all further information relating to Patents may be had on application, gratuitously.*]

May 3.—No 6,844. OCTAVIUS GRAY, 4, Moorfields, Fore Street, London. Improvements in drain or sewer traps.

May 6.—No. 7,019. CHARLES ACHILLE SERRE, 4, South Street, Finsbury, London. An improved manufacture of soap.

No. 7,023. ANDREW ROSEWATER, 52, Chancery Lane, London. Automatic flushing tanks.

May 7.—No. 7,075. BERTRAM HUNT and WILLIAM MACDONNELL M CKEY, 87, St. Vincent Street, Glasgow. Improvements in filtering apparatus.

No. 7,117. HENRY SCOTT, 33, Chancellor's Road, Hammersmith, London. Improvements in the manufacture of soap.

May 8.—No. 7,153. WALTER STOCK, 104, Colmore Row, Birmingham. Improvements in syphon cisterns.

No. 7,184. CHARLES HAWTHORNE EDWARDS, 6, Lord Street, Liverpool. Improvements in the manufacture of gas retorts, drain pipes, and other earthenware or clayware.

May 10.—No. 7,318. JOHN PITT BAYLY, 18, Fulham Place, Paddington. Improved drainage and sewerage system. (William Hallock, United States.)

No. 7,330. JAMES BLOOM EVERITT, 34, Southampton Buildings, London. Improvements in the manufacture of stays or corsets.

May 12.—No. 7,361. EDGAR MARTIN, Hamper Mills, near Watford, Herts. Improvements in filtering machinery.

May 13.—No. 7,418. GEO. STUBBS, 14, Denmark Road, Ridgway, Wimbledon, Surrey. A sifting ashpan.

No. 7,419. WILLIAM WALKINGTON, 69, Skinner Lane, Leeds. An improved city and town refuse destructor.

No. 7,434. ALBERT CLAUDE BOWERMAN, P. O., Box 1,071, Ottawa, Canada. Improvements in sewer traps.

May 14.—No. 7,500. LEOPOLD HESSE, 21, Cockspur Street, London. Improvements in destructors for town and other refuse.

May 16.—No. 7,673. ERHARD LUDWIG MAYER, Norfolk House, Norfolk Street, London. Improvements in or connected with the treatment of sewage.

May 19.—No. 7,751. THOMAS FRATER, 60, Lady Lawson Street, Edinburgh. Washing machines.

May 20.—No. 7,857. EDWARD JENNINGS and THOS. BYRNE, 6, Lord Street, Liverpool. Improvements in washing machines.

May 23.—No. 8,039. HENRY CHRISTOPHER GLINSMANN. Improvements in washing machines.

No. 8,077. GEO. ALLEN, 70, Chancery Lane. Improved composition of soap.

May 27.—No. 8,239. WALTER SCOTT WEST, 77, Chancery Lane, London. Improvements in and relating to apparatus for handling and treating sewage.

SPECIFICATIONS PUBLISHED.—1889.

17,546. REDMAYNE. Ash screen. 6d.
11,064. COUSINS (Olsen). Drain pipes, &c. 4d.
10,237. DEELEY. Syphon-flushing cisterns. 11d.
16,369. O«CHARDSON. Disinfecting, &c. 8d.
9,822. GILES. Sluice valves. 8d.
13,236. ROBINSON and EDWARDS. Ventilating hats, &c. 6d.
8,928. MACKAY (Baxter and another). Filter presses. 6d.
9,275. BIDTEL. Washing machines. 8d.

1890.

1,594. WILDING. Water-closet basins. 8d.
3,261. LAKE (Jewell). Filtering water. 8d.

The above Specifications may be had from Messrs. Rayner & Cassell, Patent Agents, 37, Chancery Lane, at the prices quoted.

MR. J. KNAPTON THOMPSON, C.E., has been commissioned by the Corporation of Leeds to fit two boilers and the public refuse destructors with his smoke consuming apparatus, the general application of which will, it is claimed, solve the smoke problem in towns.

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REVIEWS.

History and Pathology of Vaccination. By EDGAR M. CROOKSHANK, M.B., Professor of Comparative Pathology and Bacteriology in, and Fellow of, King's College, London, &c. Two vols., with twenty-three coloured plates. H. K. Lewis.

Of these two large and handsome volumes the first, entitled "A Critical Inquiry," contains the author's part of the work, and consists mainly of an inquiry into the early history of vaccination, with the life and letters of Jenner, and subsequent investigations by different experimenters on vaccine lymph of various kinds. In this respect, the work is a cyclopædia of information on the subject of vaccination, copious citations being given at every stage. Of pathology, in the modern sense of the word, there is very little, the relations of cow-pox to other diseases being summed up rather dogmatically in a few words at the end of the volume. The author writes with a strong bias against vaccination, and speaks of the "futility of the practice." The second volume is entitled "Selected Essays," being made up of the original pamphlets and papers of Jenner, Pearson, Ceely, Badcock, &c., including the author's account of the Wiltshire outbreak of cow-pox in 1887. And here we are all under a debt of gratitude to Professor Crookshank for collecting and publishing in one volume so many classic essays which have never before been available without great trouble. One paper in particular—Jenner's rejected communication to the Royal Society, a year or two before he published his Inquiry—is now published for the first time. It was brought to light in the library of the Royal College of Surgeons by the author, who informs us that it had been looked upon as the MS. of the published Inquiry. This new paper the author has embodied in the first volume. A beautiful reproduction of an engraving of Benjamin Jesty forms the frontispiece of the work; Jenner is, in fact, dethroned, and Mr. Jesty takes his place. This is ominous.

The first three chapters deal with the history of small-pox inoculations as practised in the East, and the introduction of the practice into Europe, with the mode of operation. India seems to have been the starting-point of the practice, which was carried on also by the peasantry of various countries in Europe (Italy, Pembrokeshire) before Lady Mary Wortley Montagu wrote about it from Constantinople, and succeeded in making it fashionable, after which it became universal. Sutton's method of imparting a very mild variety of small-pox, at first a precious secret, consisted in using lymph in a "crude, watery condition," or as we should say now, before the vesicles had become pustules. Dimsdale carried this method to Russia, and the author would not object to its use even now, in the case of attendants on small-pox patients. Chapter iv. deals with Haygarth's system (1784) for the prevention of small-pox, viz. by notification and isolation, with public small-pox inoculations every two years or so. In chapter v. we have "The Traditions of the Dairy-maid," and Benjamin Jesty's vaccinations of himself and family in 1774, twenty-two years before Jenner's first successful vaccination. Chapter vi. brings us to Jenner at last, with his life and letters. We are told that in 1796 or 1797 Jenner sent a MS. to the Royal Society, but it was declined; "he received a friendly admonition in reply, that as he had gained some reputation by his former papers to the Royal Society, it was advisable not to present this one, which would injure his established credit." The author elsewhere says that they were justified in this rejection. Jenner had discovered nothing, we are told, and he had made only one experiment. The eighth chapter gives us this rejected inquiry, with running comments by the author, who then gives an account of the published inquiry (1798), and compares it with the previous paper. The author shows much animus against Jenner, though more measured in his terms than Dr. Creighton, and writes thus: "All that the Inquiry contained was known to dairy-maids and farmers, with the exception of the doctrine of spurious cow-pox, and certain speculative comments. All that was added experimentally, to what had been previously practised, was the inoculation of horse-pox from arm to arm, in imitation of cow-pox." Then follow eulogistic remarks on Jenner by Baron, printed derisively in Egyptian type, and those of Simon in 1857, also in Egyptian type. The author can hardly be serious in calling his work a "critical inquiry." Chapters ix.–xiv. deal with various presumed sources of "vaccine lymph," viz. human small-pox, cattle-plague, sheep small-pox, goat-pox, cow-pox, and "grease," each having a chapter to itself, as if equally important with the rest. This arrangement bears rather an *ad captandum* appearance; but these chapters are really the most important part of the work. It is the author's aim to show that all sorts of diseases of all sorts of animals have been regarded as sources of "vaccine lymph" by various experimenters, hence goat-pox has its chapter to itself, of two pages. An immense amount of information is brought forward on these subjects; the experiments of Sonderland, Ceely, Badcock, Chauveau, Voit, and others on variolation of the cow being described in detail, with copious extracts from their works. Badcock's lymph, raised by small-pox inoculations into cows, and with which 20,000 persons at least were vaccinated, the author declares to be variolous lymph, and that those persons "have not been cow-poxed, but they have been variolated." This is said, because other experimenters met with disastrous results, and because Chauveau believed in the autonomy of small-pox. As to cattle-plague, it is argued that Baron mistook it for natural cow-pox, and hence the modern doctrine of cow-small-pox, *i.e.* that cow-pox is small-pox in the cow. The close affinity of cattle-plague with human small-pox is shown by citing Murchison, and the bad results which ensued in India on attempting to utilize cattle-plague are given in detail, with Seaton's interpretation, which is severely handled. Regarding sheep-pox, Professor Crookshank says, "... not only was vaccination employed to protect sheep from sheep-pox, but 'vaccine lymph' was raised from sheep-pox to protect human beings from small-pox," and Sacco's experiments are then given. Marson is also said to have "succeeded in raising on the human subject a vesicle with the physical characters of the vaccine vesicle, and thus confirmed Sacco's vaccinations." This chapter would have been more complete if Koch's statement on this subject had been added. "I have myself made many attempts to vaccinate sheep," says Koch, "but never succeeded; conversely I was never able to transfer sheep-pox virus to man. I inoculated myself with it, and when convinced of its freedom from danger, I inoculated children, and other surgeons did the same at my request: not one of us ever raised a pock." Koch added that in the small-pox great epidemic of 1871–73 no cases of sheep-pox were met with, and *vice versâ*; hence "sheep-pox has nothing at all to do with small-pox." Ceely's papers on natural cow-pox are given in full, with coloured illustrations, declared to be somewhat fanciful. Next to Ceely's cases of natural small-pox in milkers, come the author's Wiltshire cases of 1887.

After abundant citations on "grease," the author writes: "Jenner's theory of the origin of cow-pox has been discouraged, and completely replaced by the theory of cow-small-pox, advocated so strongly by Baron, and supported by an erroneous interpretation of Ceely's and Badcock's variolation experiments; and thus the cow-pox and the "grease" of the farmers were no longer of interest, while the hypothetical cow-small-pox, which could never be discovered, has been credited with having become extinct since the days of Jenner. An account of horse-pox by French veterinarians is then given for the benefit of English veterinarians, with striking illustrations. Equination, we are told, is still in favour in France. M. Layet, of the Animal Vaccine Station, Bordeaux, told the author that on two occasions he had renewed his stock from equine sources. Chapter xv. gives an account of the introduction of vaccination into other countries. The scientists of Europe and America were deceived by

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Jenner's term "variolæ vaccinæ," and thought the disease was commonly known in England as cow-small-pox. The last chapter is on the progress of vaccination in England. It was this abuse of terms just mentioned which made vaccination popular at first—so the author argues—and which has maintained its popularity ever since. Truly, there is much in a name. Five pages are taken up with the clinical report of a boy who had small-pox fifteen years after vaccination. Why this long account is inserted is not stated; the author might also have said that second and third attacks of small-pox itself have occurred. All the outbreaks of natural cow-pox during the present century in Europe are enumerated, and they have apparently been very numerous. Cow-pox, insists Professor Crookshank, is specifically distinct from small-pox. Amongst the distinctions we are told that "cow-pox begins as a local affection, and is followed by constitutional symptoms. Small-pox is an acute disease, characterized by sudden and severe fever, which is followed, after forty-eight hours, by a generalized eruption." These questions of analogy and homology are hardly to be settled in so summary a fashion. The author follows Dr. C. Creighton in saying that the real analogy of cow-pox is with syphilis; but thinks the latter makes too sweeping an assertion in saying that all cases of vaccinal syphilis are truly vaccinal—simply reversions to the original type of the disease in the cow. Illustrations of Ricord's cases of inoculated syphilis are inserted to show its close resemblance with inoculated cow-pox.

In conclusion, we are told that the profession has been misled by Jenner, Baron, the Reports of the National Vaccine Establishment, and by a want of knowledge, &c. Cow-pox does not exercise any specific protective power against small-pox. "The Jennerian method has for nearly a century struggled for existence with the support of the cow-pox theory and the numerous and ingenious explanations of failures, &c." The author would substitute Haygarth's system of notification and isolation, and stamp out small-pox as we stamp out cattle-plague. Unfortunately we are not cattle, and the necessary isolation would be impracticable in epidemics of small-pox. If we could be promptly pole-axed there would be some reason in this suggestions.

The first volume ends, in fact, with the formal proposal to abandon vaccination. This is not the place to defend that practice; but surely it is not correct to speak of the Jennerian method as struggling for existence, especially when we look at other countries, as well as our own. Again, the author calls vaccination a futile practice; but, curious to say, no evidence at all has been adduced in his work to justify the term. We have the iniquity of Jenner in calling cow-pox "variolæ vaccinæ"—*fons et origo mali*—and we have the various attempts to utilize fresh sources of lymph, sometimes with good, sometimes with disastrous results—as in India—in which latter case of course the lymph has been abandoned. Professor Crookshank says that we do not know what lymph we are using, and therefore we must abandon vaccination. The futility of vaccination, or its protective power, is not examined into in the least with regard to its effect on small-pox mortality. Neither statistics nor personal experience is given on the subject. Koch, it will be remembered, lays great stress on the latter kind of evidence.

Nevertheless the work contains a very large amount of information, and though a good deal of it is of antiquarian interest chiefly, these volumes will no doubt be studied by all who are interested in the long struggle of Jenner, and the efforts of succeeding experimentors. After all, we do not vaccinate ourselves because Jenner used his abominable term, but because it protects us against small-pox That is the sole reason. The work is beautifully printed in large type; the illustrations are rather highly coloured.

Twentieth Annual Report of the State Board of Health of Massachusetts. 1889.

It was natural that Massachusetts, as one of the oldest settled States in the Union, should assume a forward position in the march of sanitary progress. The Annual Report of the Board of Health for the year ending September 1888, very clearly indicates the high degree of administrative efficiency in sanitary matters which has been attained in this State. The relatively advanced position occupied by Massachusetts is emphasised by the fact that the Board is no longer content with an administration of the sanitary affairs of the State based upon the results of European experience, as is necessarily the case in the younger States, in which the Health Department is often rather scurvily endowed, but is able to devote a portion of its energies to original research—as witness a couple of papers on the mode of entrance of trichinæ into swine, and the distribution of micro-organisms in the air of hospitals.

Seventeen outbreaks of small-pox were recorded within the borders of the State during the year, involving 32 persons, and attended by 5 deaths. In a considerable number of cases the disease arose in connection with the operations of paper-mills. In accordance with an arrangement come to at a conference held at Toronto in 1886, notification is made to all the other States, and to certain districts in Canada, on the occurrence of any outbreak of small-pox within the domain of any of the parties to the arrangement. A complete series of vital statistics is given in the Report for the year 1887, from which it appears that the population of the State was estimated for the year at 2,210,388; the birth-rate was as low as 26·4 per 1,000 of the population; the illegitimacy-rate was 21·8 per 1,000 births, being thus much lower than in England. The marriage-rate was 19·4, a higher rate than in any year since 1873; the average age at marriage was, for men, 29 years, for women, 25½. The death-rate was 20·3 per 1,000 of the population; the infantile mortality-rate 160 per 1,000 births. The inspection of food and drugs is carried out in Massachusettes with a degree of efficiency and thoroughness unknown in the majority of the States; 4 analysts and 8 inspectors are employed by the State Board of Health, in addition to those employed by local authorities. 4,904 samples of food were examined by the Board's analysts during the year, of which 30·9 per cent. were found to be adulterated or below par; in the case of milk the percentage of adulteration was as high as 39·6. Maple syrup and sugar were found to be rather extensively adulterated with glucose. The use of "Oleomargarine" in the States, as with us, has considerably increased subsequent to the introduction of special legislation upon the subject; while the proportion of samples of butter found to be adulterated has fallen considerably. More than half the samples of honey taken were found to have been adulterated by the addition of glucose. In accordance with the uncompromising fashion of dealing with food adulteration which characterises American Boards of Health, the names of the brands which were found to be adulterated, and of their manufacturers, are in every case published in the report of the Board. In six cases the wrappers of confectionary packages were found to contain considerable quantity of arsenic. Two samples of cream of tartar were found to consist wholly of acid phosphate of lime and corn starch. A preparation extensively advertised as "a non-intoxicating stimulant, possessing all the invigorating and sustaining properties of alcohol, without its deleterious effects . . . a cure for drunkenness, for it removes that craving for drink that men find so difficult to resist," was found to contain 28·2 per cent. by volume of alcohol. Professor Mark, on the instruction of the Board, has undertaken a course of experiments in order to determine the methods by which trichinosis is usually spread amongst swine. He found that amongst hogs reared in the vicinity of Boston, and fed mainly on the offal of the city, no less than 12·86 per cent. were trichinous. With so large a prevalence of trichinosis as this implies, we learn with some relief that in the 20 years of the Board's existence, not more than 23 cases of human trichinosis in the State have been reported, of which only 1 proved fatal. Professor Marks believes that the infection of the hog is caused

by the consumption of uncooked trichinous meat contained in the city offal; hogs raised in other parts of the country were found to be not nearly so frequently infected. The Board was required by the State Legislature to make an investigation into the question as to whether the use of opium is increasing within its domain. After painstaking inquiry the Board arrived at the conclusion that "the use of opium is not increasing in Massachusetts." Probably the most interesting part of the report is the section which gives the results of some investigations into "The Number and Distribution of Micro-organisms in the Air of the Boston City Hospital, with some Carbonic Acid Determinations," by Mr. G. R. Tucker. Mr. Tucker has devised a modification of Frankland's apparatus for the collection of the micro-organisms in measured quantities of aspirated air. He found, as was to be anticipated, that the prime factor in determining the number of micro-organisms in any given quantity of air was the degree of commotion, vibration, or stirring up of the dust, in progress at any given time; although, curiously enough, this appeared to have little effect in determining the number of moulds at any time present in the air. Contrary to his expectations the investigator found that the air of the infectious wards (scarlet fever and diphtheria) showed a freedom from micro-organisms not to be found in any other part of the hospital; this he attributes to the more modern construction and more efficient ventilation of these wards. As respects the administrative sections of the hospital, he found that the air of the officers rooms yielded an average of 2 bacteria in every 10 litres of air; of the nurses rooms, 9·4; of the domestics bedrooms, 20·3; of the laundry women's (the lowest class of domestics) bedrooms, 36·7. Mr. Tucker is, therefore, inclined to believe that the number of bacteria present in the air of any apartment is largely dependent upon the personal cleanliness of its occupants. The report is freely illustrated by plans and diagrams, and is altogether well worthy of the reputation which the Massachusetts Board of Health has already won for itself.

NOTES ON BOOKS.

Ground Water and Shallow Wells in relation to Public Health. By W. B. Featherstone, M.B.Lond. Birmingham: C. Stocker. 1889. Pp. 76.

A capital collection of facts and figures drawn from English, American, German, and other sources, with references to the originals, which cannot fail to be of service to the student, writer, and medical officer of health. The compiler, however, assumes too readily the relation of magnesian limestone and goitre. Considering that this disease cannot always be so accounted for, and that the use of a highly magnesian water at Sunderland has been followed by none of the results at first not unreasonably apprehended.

Ambulance Leaflets. Crosby Lockwood & Son.

These leaflets, four in number, contain admirable information most clearly and concisely given, on the following subjects:—No. 1. Rules to be observed in the management of epidemic or contagious diseases. No. 2. Diagnostic table of the principal fevers. No. 3. Characters of good meat. No. 4. Diagnostic table of the chief forms of insensibility.

Leaflet No. 1 is especially valuable, and will be found most suitable for distribution in poor or even well-to-do neighbourhoods where any outbreak of infectious disease has occurred; the rules are complete and easy to understand. Leaflet No. 2 is not of so much practical value, as the knowledge contained therein belongs rather to the medical profession than to the general public. Leaflet No. 3 may be studied with advantage by both housekeepers and cooks. Leaflet No. 4 forms a useful aid to ambulance students, and a subject not easy to grasp is simplified by being set forth in a tabular form.

The leaflets are cheap and the matter quite reliable, they therefore form a welcome addition to sanitary knowledge. Such subjects as house drainage, clothing, &c., might with advantage be similarly treated.

Supplementary Report upon the Fish Supply of the Metropolis as representing that of the United Kingdom, being further practical, legal, administrative, economical, industrial, financial, and scientific reforms for improving, developing, distributing and cheapening the Fish Supply, especially for the poor and comparatively poor.

This report, bearing date April 7, and addressed to the members of the London County Council, is full of interest and information. There can be no doubt that there is at present an enormous waste of fish and products made or derivable from fish, and that this waste is avoidable. The problem Mr. Lawrence-Hamilton in this and his previous report has set himself to solve is, how this waste may be prevented. He has inquired carefully into the conventional customs and causes which increase the cost of fish to the consumer and inflict a cruel loss upon the fish catcher. Owing to neglect in not working up unmarketable fish, as is done in America, it is estimated that upwards of £2,156,900 a year is wasted in the United Kingdom. Much heavier losses are entailed in various ways; for example, by the ignorance of those engaged in the trade, by importing foreign fish instead of developing our own fisheries to the full, avoidable fish spoiling, inadequate facilities for distributing fish, &c. Mr. Lawrence-Hamilton strongly urges upon Parliament to grant a special commission on fish, suggests the appointment of a minister of fisheries, and the establishment of free technical schools for fisher folk. As regards the treatment of fish as soon as caught, he recommends its being immediately bled, gutted, cleaned, and washed inside and out with excess of fresh flowing sea-water. After this it should be subjected to dry-air refrigeration, so as to convert it into an imperishable product. The questions discussed in the report are of national importance, and we trust will receive prompt attention.

LAW REPORTS.

HIGH COURT OF JUSTICE, QUEEN'S BENCH DIVISION.—May 13.

(*Before* Lord Coleridge *and* Mr. Justice Mathew.)

THE LAMBETH WATERWORKS COMPANY *v.* RICHARDSON.

This case raised a question under the Act of 1887, 50 and 51 Vict., c. 21, to limit the power of water companies to cut off the tenants' water supply in cases where the rates are paid by the landlord. By section 4 this is enacted, and it is provided that the money due shall be a "charge on such dwelling house," and "without prejudice to such charge the amount may be recovered from the owner or the occupier for the time being, as water rates might before be recovered." In the present case a house in East Street, Lambeth, was under a long lease to a party who sublet to one Smith, who himself underlet, and was not occupier, but received the rent. He had taken under the old Waterworks Act of 1867, section 72, which enacted that "the owners of all dwelling houses occupied as separate tenements of an annual value not exceeding £10 shall be liable to payment of the rates instead of the occupiers thereof, and the powers and provisions therein contained for the recovery of the rates from the occupiers shall apply to such owners, and the person receiving the rent of such house from the occupier thereof shall be deemed the owner of such house or tenement." In August last Richardson purchased the superior lease subject to the under lease to Smith, who, however, was ejected. When he left three years' arrears

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of water rates were due, for which the company now sued Richardson under the above enactments, and the county court judge gave judgment for the company. Richardson appealed from the judgment.

Mr. Broomfield appeared on his part, and contended that the defendant was not liable. [Mr. Justice Mathew. —The arrears, which, I presume, had been demanded from Smith, are made "a charge upon the premises," and your client purchased the house subject to that charge.] It is a charge only on the interest of Smith. [Mr. Justice Mathew.—The enactment is clear in its terms: it is "a charge on the premises."] It surely could not have been intended in such a case to make the arrears a charge on the interest of the purchaser, who knew nothing of the arrears? [Mr. Justice Mathew.—He should have inquired.] Next there is no right of action against Richardson, but only the "occupier for the time being." [Mr. Justice Mathew.—The words are "the owner or occupier for the time being."]

Mr. H. Avory was for the company, but was not called on.

The Court held that the county court judge was right in his judgment, and that it must be upheld.

Appeal dismissed.

May 14.

BOOTH, APPELLANT—FERRETT, RESPONDENT.

This case, begun yesterday, raised a question as to whether a Salvation Army "refuge" is a common lodging-house within the Common Lodging-houses Act of 1851, required to be registered and approved by the inspector appointed by the local authority. Mr. Booth had opened a refuge at 272, Whitechapel Road, which had not been inspected or registered under the Act, and an information was laid against him under the Act, on the ground that it was a common lodging-house. The magistrate held that it was so and convicted; but stated a case to raise the question, on which Mr. Booth appealed. It was proved and not contested that Mr. Booth, in and from October 1889, opened and kept open the house for the reception of male lodgers to sleep in one common room for one or more nights, and to be supplied with food in it and another common room at an inclusive charge of 4d. per night for bed, supper, and breakfast. There was accommodation for 100 men, and as many as 69 were on one night found sleeping in the room. Notice to register the house under the Act was given by the Commissioners of Police, and in spite of such notice and after the expiration of a month Mr. Booth continued to receive male lodgers in the house (in the manner already stated), the house not having been registered or approved. It was not disputed by him that if the house was a common lodging-house within the Act the conviction was right. The lodgers so sleeping in separate beds on the floor in one common room were strangers to each other, and were of the class of poor persons who frequent the registered common lodging-houses. A notice was posted that 4d. a night was charged for supper, bed, and breakfast, and frequently a notice that the house was full. The sum of 4d. was paid for such accommodation by such as had 4d. to pay, or a smaller sum if they had less, while free tickets were given to persons with no means, at the discretion of the person in charge, such free tickets being paid for by charitable friends of the institution. The person in charge also exercised his discretion in refusing to admit persons who were, in his opinion, able to pay more than 4d. for their night's accommodation. The rooms were opened for lodgers at 5 o'clock each evening. Supper was given at 7, and a Salvation meeting held at 8. Up to 11 o'clock the lodgers were admitted and given supper. It was contended on the part of Mr. Booth that this was not a common lodging-house within the Act, on the grounds that the house was kept partly for charity and not as a common inn, which is common to the sexes; and that the owner elected to refuse whom he chose, and that it was partly maintained by charitable contributions, and not for the purpose of profit or gain; and that the question whether the facts constituted a common lodging-house within the Act was a question of law. The magistrate found that this was a lodging-house established and maintained, not for any pecuniary purpose of gain, but for the accommodation of the poorest class of persons only, partly with a charitable, and partly with a religious object; and he found that it was a common lodging-house, as the appellant received therein such poor persons for short periods upon the terms of inhabiting one common room, although strangers to each other; and he found that it was a common lodging-house within the Act upon the facts proved before him as above set forth, and having regard to the provisions of the Act, and the Public Health Acts, and to the need of sanitary protection of the successive relays of such poor persons so lodged by the appellant and, through them, of the public at large, and he therefore convicted the appellant, but submitted to the Court whether he was right in holding that the house was a common lodging-house.

Mr. Willis, Q.C. (with Mr. Colam), appeared for the appellant, Mr. Booth, to contend that the magistrate was wrong, and that it was not a case of a "common lodging-house." This, said Mr. Willis, is a question whether a Salvation Army refuge is a common lodging-house—that is, whether it requires to be inspected by the proper officer and approved by the local authorities, subject to any alterations which they may require. There is no objection to the entrance of the police at reasonable times; but the contention on the part of Mr. Booth is that these are not "common lodging-houses" within the Act, nor subject to control and inspection as such. The learned counsel for the appellant, continuing his argument to-day, said the inmates were admitted at the discretion of the manager, and some without payment of the usual charge, or at a less rate. The institution was not carried on for any profit, but its object was partly charitable, and partly religious, the object being to meet special emergencies and pressing distress; and while there was no objection to the entrance of the police for police purposes, it would be seriously fettered if the regulations of common lodging-houses were to be applied and enforced to such institutions as this.

Mr. R. S. Wright, instructed by the Solicitor of the Treasury, argued in support of the conviction, contending that this was a case of a common lodging-house. It was said to be a question of fact; and it was found by the magistrate that this was a common lodging-house. The phrase appeared to distinguish between a lodging-house where all were admitted, and private lodging-houses. Upon sanitary grounds it did not matter whether the object was profitable or charitable.

The Court, however, came to the conclusion that the conviction was wrong.

Lord Coleridge, in giving judgment, said, as the Act contained no definition of "common lodging-houses," it was necessary to see what are "common lodging-houses." It is clear that it is not all lodging-houses, but only "common lodging-houses." It should seem, looking at the scope and intention of the Acts, that such an institution as this—a charitable institution, not carried on for purposes of profit or gain, not open to all comers, but only on such terms and conditions as the managers may direct—is not within these Acts of Parliament, which contain extremely stringent regulations, highly proper for the purposes of the institutions, which appear to be intended where all persons are received for purposes of gain. Such lodging-houses being kept for the purpose of profit, it is reasonable to assume that the keepers, so that they do not violate any law, will endeavour to make as much money as possible, and that, therefore, injury or danger to the public may result from the houses being over-crowded or kept without regard to sanitary conditions; and therefore Parliament established certain regulations, highly proper for such houses, which appear to have been intended by the Act. He could not, therefore, say that this institution came within the Act, or within the notion anyone would entertain of a "common lodging-house." According to common under-

already held, in the case of a female lodging-house, that it did not come within the Act, and there had been no attempt to reverse that decision. It was for those who desired to bring such institutions as these within the Act to show that they came within it. But such an institution as this certainly did not come within his idea of a "common lodging-house." On the whole, therefore, he came to the conclusion that the Act was not intended to apply to such institutions as this, and, therefore, that the conviction was wrong, and must be set aside.

Mr. Justice Mathew said he was of the same opinion. He did not think that a person of average intelligence would understand this to be a "common lodging-house."

Appeal allowed, with costs.

POLICE COURT CASES.

FOOD AND DRUGS ACT (1875).

Frauds in the Tinned Meat Trade.

At the Dale Street Police Court, Liverpool, before Mr. Raffles, John H. Holmes, 50, Heyworth Street, and Michael Jackson, 1, 2, and 3, St. James Street, were summoned under the 6th section of the Sale of Food and Drugs Act, for having sold tinned mutton not of the nature, substance, and quality of the article demanded. Mr. Moss (of the town clerk's department), who conducted the prosecution, said that cases similar to these had not previously been taken before his worship. Inspector Baker had visited the defendants' shops and asked for a tin of mutton at each, for which he had paid 10½d. Samples of the contents were sent to Dr. Campbell Brown, and he had certified that "he was of opinion that the said samples consisted of cooked beef with a little mutton fat melted in the tin." The tins of mutton were sold at 10½d. to 1s. 2½d., whilst the tinned beef was sold at 7d. to 9½d. per tin.

Inspector Baker detailed the circumstances of the purchases, and in answer to the bench he said that the tins did not come from New Zealand, but Chicago.

Mr. Smith, for the defendants, pleaded that they were totally unaware of the nature of the meat in the tins, and also added that it might have been a case of mistake in the labelling, as frequently tins of lobster were labelled salmon.

Mr. Moss stated that the prosecutions had been taken owing to discussions in papers circulating in the grocery trade as to tinned beef being sold for mutton.

The bench inflicted a fine of 5s. and costs in each case.

[A correspondent of the *Liverpool Courier* points out that no mention was made of the brand under which the alleged roast mutton was sold, and he thinks that as there appear to be a number of canning firms in Chicago who deal in this article, it is obviously unfair to all except the particular firm which canned the mutton in question that the name of that firm was not mentioned in the course of the proceedings. In justice not only to the dealers in this article, but to consumers, he observes, it would be well if the prosecution had stated, or that the public health officer would state, the particular brand which was purchased, and upon which the proceedings were founded.—Ed.]

Tinned Delicacies.

Mr. A. Grist, sanitary inspector of St. Saviour's, Southwark, applied for an order condemning a quantity of tinned salmon and sardines. He said that he saw a man in the New Cut, Blackfriars Road, selling tins of salmon and sardines at 3d. each. He purchased one, and upon opening it found it to be putrid. He at once seized the defendant's barrow, and found it contained 367 tins of salmon and 72 of sardines. Mr. Fenwick having examined the fish made the necessary order condemning them.

ham, appeared in answer to two summonses issued by Benjamin Bolt, inspector under the Food and Drugs Act for Aston, charging him with selling two samples of milk adulterated with 25 per cent. of added water. Bolt proved the purchase of the milk and the adulteration, and Mr. Buller, for the defence, put in a warranty, given by the farmer from whom the milk was bought, certifying that the identical milk was pure. In consequence of a conversation which defendant had with Bolt on a certain morning, he took a sample of milk from one of his men before he left the dairy in the morning, and subsequently another sample was taken while the man was on his "round." The first sample, on analysis, bore out the warranty, and was found to be pure; but the second sample was discovered to have been adulterated with several per cent. of added water. Mr. Buller called the farmer who despatched the milk, and who swore positively that it was pure, and also defendant's son, who received it on its arrival at the railway station.

A fine of 40s. and costs in each of the two cases was imposed, in all £5 13s.

Adulterated Coffee.

G. Holbrook, of Tothill Street, Westminster, was summoned by the local board for selling coffee at the rate of 1s. 4d. a pound adulterated with 25 per cent. of chicory. The defendant told the magistrate that it was so common now to sell a mixture that he assumed that anyone wanting pure coffee would specifically mention it. Mr. Sheil said he would correct that erroneous idea by fining him 40s. and 12s. 6d. costs.

William Harvey, of Tufton Street, was fined 20s. and 12s. 6d. costs for a similar offence, the percentage of chicory being 65 per cent. The "coffee" was only charged for at the rate of 1s. per pound.

Whisky and Water.

Edward McLeod Vickers, of Victoria Road, Pimlico, trading as the City and Suburban Wine Company, at Holbein House, Pimlico Road, was summoned by Fredk. T. Poulson, Chief Sanitary Inspector of the Chelsea Vestry, under the Adulteration of Food and Drugs Act, for selling as whisky a mixture of spirit and water, which was found, on analysis, to be 70 under proof. John Foote, an assistant-inspector in the vestry's service, proved that he asked for a bottle of Scotch whisky at defendant's shop, and was told that there were different prices. He purchased an ordinary-sized bottle of the cheapest kind for 1s. 8d. Nothing was said about quality. The analyst's certificate in respect of this sample was that there was 45 per cent. of added water to spirit reckoned at 25 per cent. under proof originally. Mr. Poulson stated that this was not a wine and spirit shop picked out invidiously for prosecution. Half a dozen samples of spirits from public-houses were taken the same day, and all were of the required standard of strength and free from adulteration. Mr. Rymer urged that his client was a young man who had recently started in business, and, unfortunately for him, he was unaware of the necessity of putting a proper label on diluted spirits. It was preposterous to expect unwatered whisky at the price. Defendant had been fined a large sum at Lambeth Court for another offence about the same time, and therefore he hoped that only a small penalty would now be imposed. Mr. Sheil: I will fine him the full amount of £20. A person who would not go to a public-house would send to a shop of this sort, and think he was buying the proper article in a bottle at a cheap rate. The customer does not get half what he pays for. Mr. Rymer, for the defence, said that defendant could sell this article if he labelled it with the strength. Mr. Sheil: Yes. That would make all the difference between fraud and honesty. I shall impose the full penalty of £20 and 12s. 6d. costs, and in default of distress one month's imprisonment.

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PUBLIC HEALTH ACT, 1875.

Water Supply.

At West Ham, Mr. J. Robey, of 194, Bow Road, Bow, the owner of the houses Nos. 10, 12, 14, and 16, Hill Street, Custom House, was summoned at the instance of Lewis Angell, surveyor of West Ham, for neglecting to comply with a notice requiring him to provide proper apparatus and fittings for affording sufficient water supply to the houses named. Mr. E. Morten prosecuted for the West Ham Corporation. Evidence was called detailing the facts and the action taken by the corporation, and the defendant's agent pleaded that the papers sent had been mislaid and the subject forgotten. Mr. Baggallay said it was a serious offence, and in respect to the four houses he imposed a fine of £5 with £4 9s. costs.

Raids on Rookeries.

William Henry Nightingale was summoned by the Coventry urban sanitary authority under the Public Health Act of 1875 to answer two charges in respect to property owned by him in Palmer Lane and Cook Street. The Town Clerk, who appeared for the prosecution, stated that the defendant was the owner of a great deal of small-house property in and out of the city, and frequent complaints had been preferred against him. He hoped that the Bench, instead of inflicting a fine of a few shillings, would award an exemplary penalty.

Frederic Booker, inspector, stated that 6, Palmer Lane, and houses 2 and 3, court 2, Palmer Lane, were in a most filthy and unwholesome condition, and that the health of the inhabitants was endangered thereby. An order had been served on the defendant on January 24 to put these houses into proper condition. No notice had been taken of it, and, when the present summons was taken out, they were still as bad as ever. The ceilings of the lower rooms were bare to the floor of the upper ones. They were quite black, and the whole place was in a disgraceful state. Since the summons had been issued a man had been put to work on two of the houses, but the other house was still untouched.

In the second case, the Town Clerk stated there was a defective drain in court 1, Cook Street, in respect of which notice had also been served on the defendant. He had not complied with the notice, and the drain, which was defective in structure, was constantly overflowing.

Mr. Frederic Booker proved the service of the notice on defendant, and stated that there was only this one drain in the court. There were two 10-inch traps to it, and when the drain became stopped it overflowed, and was in this disgraceful state up to the time the summons was heard.

The Bench inflicted a fine of £5 and 12s. 6d. costs in the first case, or, in default, a month's imprisonment; in the second case they made an order on the defendant to abate the nuisance within fourteen days, and to pay the costs, 10s.

At Marylebone Mrs. Evans and Mr. Herring, owners of six houses at Robert's Place, Drummond Street, Euston Road, were summoned by Mr. Henry Lazarus, of 38, Tavistock Square, for allowing the houses to be in a filthy and dilapidated condition, injurious to health, and unfit for human habitation. Mr. Corrie Grant, barrister, appeared in support of the summonses; and Mr. Freke Palmer, solicitor, defended Herring. Mr. Grant said that the complainant in this case was an author and a member of the St. Pancras Vestry, and he was being assisted by the Mansion House Council on the Dwellings of the Poor. The houses were found to be in a most abominable state, and Mr. Lazarus was taking the case up purely on public grounds. It was competent for any inhabitant, quite apart from the local authority, to take action in a matter of this kind. The summonses were heard separately, but the evidence was of a similar nature. Mr. Lazarus stated that he had visited the houses several times during the past ten or fourteen days. Speaking with regard to Nos. 1, 2, and 3, he said that the houses consisted of two rooms, an upper and a lower room. The lower room was extremely dirty, as if it had not been touched for years; the walls were damp and dirty; there was no through ventilation; and the rain-pipes were so defective that water had penetrated through the walls into the rooms. The staircases leading to the upper rooms were rickety and in a dangerous condition, and the upper rooms were in as bad a state as the lower rooms. The light was all obtained from the front, and there were no openings in the rear of the houses. He had taken these cases up because he considered it scandalous that poor people should have to live in such places. Mrs. Evans said that she had received no complaint about the matter, nor had any notice been sent to her from the Vestry. She had had the lease of three of the houses for four years, and there had not been a death nor any illness among the tenants during that time. Windows could not be made at the back, for there were other houses backing against hers. Mr. Lazarus said that the woman living at No. 2 had told him that two of her children had diod, one from measles and the other from bronchitis. The walls of that house were so bad that the heads of the fowls which were kept in a place adjoining could often be seen coming through the apertures. The poor woman picked up a pillow she had placed in a bassinet for the use of her baby, and on his feeling it he found it was quite damp and wet through the dampness of the walls. The house No. 3 was worse than the others. He could actually see the light through the bricks of the fireplace. Representations had been made by the Sanitary Committee in the strongest possible form to the Vestry, who simply refused to do anything, and sat upon the Committee. The explanation of the whole matter was that the Vestry was full of house-farmers, and they would not employ a sufficient staff of inspectors to do the work properly. "Rookeries" abounded in the St. Pancras parish, and it was a scandal to civilization that they should continue to exist. The rent of the rooms ranged from 3s. to 3s. 6d. a week. Mr. Herring's houses were in nearly the same condition, but no water-pipes were broken there. There was only one water supply for the whole of the houses. In his opinion the places were quite uninhabitable. The Vestry would not do its duty, and he was taking this case up in consequence. Dr. L. Parkes, of Cadogan Square, S.W., hon. medical officer to the Mansion House Council, stated that the houses were unfit for human habitation. Mrs. Evans said that she was ready to do what was necessary, but the summons contained no particulars. Mr. Cooke made an order that the tenants in Mrs. Evans houses should be out of their rooms within a month, and that the houses should then be closed until the necessary work was done. He allowed £2 2s. costs.

PHARMACY ACT.—Sec. 17.

Chemists and the Sale of Drugs.

Mr. John Jackson Matthias was summoned for having unlawfully sold by retail to Henry Moon a certain poison, three bottles known as syrup of camphor or cough linctus, which contained a proportion to the fluid ounce of nearly half a grain of acetate of morphine, the bottles not being distinctly labelled with the name of the article and the word "Poison."—The defendant pleaded guilty to the summons.—Mr. C. F. Gill appeared for the Public Prosecutor. He said steps were taken in this case in consequence of an inquest which was held on a child who had drunk a bottle of the linctus which had been purchased at the shop of the defendant. The purchaser thinking that it was an ordinary cough medicine treated it as merely a medicine bottle, and left it about, with the result that the child drank it. In order that the matter might be inquired into, the stomach of the child was submitted to Dr. Stevenson for examination, and he discovered traces of the poison in question. Each of the bottles contained two grains of acetate of morphine and a very small part of a grain of it might be fatal to a child. The coroner who held the inquest thought it desirable that some bottles of this cough mixture should be purchased at the defendant's shop, and three bottles were purchased at the shop of the defendant. The

result of the analysis it was ascertained that there were two grains of acetate of morphine in each bottle. It was sold with the caution that it was to be kept out of the reach of children.—The Lord Mayor pointed out that nothing was said in section 17 of the Pharmacy Act as to any mixture which contained poison. He suggested that the Act should be amended by the insertion in the section of the words "any compound or mixture containing poison." Mr. Gill said he had no doubt that his lordship's observations would receive the publicity and the attention which they deserved. The defendant said he had been in the habit of preparing the preparation for over 30 years, and he was never aware that it required the word "poison." There were a number of similar preparations which had a very large sale. One of the largest druggists in the country had recently told him that it would be impossible to carry on business if the Act was so construed. The bottle in question was placed on the table, so that no label could have prevented the child drinking it. The Lord Mayor said that, having regard to the fact that this was a test case, he should fine the defendant 10s. and 2s., the cost of the summons.

INFECTIOUS DISEASES NOTIFICATION ACT, 1889.

At Greenwich, Charles Steeve, of No. 1, Shrubbery Road, Loampit Vale, Lewisham, was summoned by the Lewisham District Board of Works for failing to give notice of a case of scarlet fever in his house to the medical officer of health of the district as required by the Infectious Diseases Notification Act, 1889 The defendant was represented by his wife. Mr. Wright, clerk to the Board of Works, said notice of the requirements of the Act had been left at every house in the district, but Mrs. Steeve said she had not seen one. Dr. Jolly, medical officer for the district, said he saw one child which had apparently had scarlet fever, and was peeling after it. Mrs. Steeve said the child had no scarlet fever, and was only in bed a week. She handed in a letter from a Lewisham doctor stating that he had examined children at No. 1, Shrubbery Road, but was unable to certify whether they had had scarlet fever. Mrs. Steeve said the children had a cold, and that was all. She never told Dr. Jolly that the child Alice had had scarlet fever. Mr. Marsham said he came to the conclusion that there had been scarlet fever, and that notice should have been sent to the medical officer of health. As, however, that was the first case under the Act that had come before him he would only fine Mr. Steeve 5s. and 2s. costs.

NUISANCES REMOVAL ACT (1866).

The Disposal of Refuse.

The Refuse Disposal Company have been summoned by the Chelsea Vestry under the provisions of the Nuisances Removal Act of 1866, for abatement of a nuisance said to be occasioned on their premises at Lots Road, Chelsea, by the periodical burning of refuse. Mr. Charles Pemberton, for the vestry, said the refuse burnt was a proportion of the contents of ordinary dustbins after being sorted. While being destroyed by fire the smell was most offensive. Mr. Sheil: There is no nuisance until the defendants begin burning? Mr. Pemberton: The result of the accumulation is that it must be got rid of. The heap is the primary cause of the nuisance. Mr. Sheil: That is not the question. Under this Act, an accumulation or deposit *per se* may be injurious to health, but if it is not so in its normal state, I do not see how, with this summons, you can succeed. The burning of what otherwise is not injurious, thereby creating a nuisance, is an offence at common law, and the remedy would be by indictment. Mr. Pemberton: The refuse would be a nuisance in itself if left long enough, but they do not let it alone. The way an accumulation has been dealt with has been repeatedly held to be an offence under the Nuisances Removal Act, both in this court and other courts in the local authorities have to deal with nuisances of this sort by the tedious process of indictment at common law. Mr. Sheil: I cannot help that. I cannot go outside the Act. Mr. Pemberton remarked that his Worship's senior colleague, Mr. D'Eyncourt, was one of the many magistrates who had made orders in cases analogous to this. Mr. Sheil: I have expressed my opinion, but I will adjourn the case to come before Mr. D'Eyncourt. Mr. Pemberton said he would sooner that than have it dismissed; and it was accordingly adjourned, the solicitor for the defendant company having made a protest.

WEIGHTS AND MEASURES ACT, 1890.

At Southwark, Henry Woolridge, a coal dealer, of 9½, Gainsford Street, Bermondsey, was summoned for selling coals which were deficient in weight. Mr. Roberts, of the Solicitor's Department of the County Council, appeared to prosecute. The defendant was fined £5 and 2s. costs.

At Marlborough Street, Walter Hood, a carman in the employ of Messrs. Spencer, Farndon, & Co., coal merchants, appeared to answer a summons charging him with hawking coal which was under the weight he alleged it to be. Mr. C. A. Roberts, from the Solicitor's Department of the London County Council, who appeared to prosecute in the case, said that the summons was taken out under an Act of Parliament which came into force on January 1, and which gave the County Council power to appoint 14 officers who, equipped with scales, weights, and a conveyance, could patrol the streets and weigh any coals which they might come upon either in a van or in course of delivery. The maximum penalty which could be imposed for deficient weight was £5. Although the County Council had only sent out these 14 "coal officers" since April 1, an enormous number of cases had been reported, there being last week upwards of 150. Owing to the wording of one of the sections of the Act, unless the officer weighed the coal before or as it left the premises of the dealer, it had been held that the carman only could be summoned. A case was dismissed by Mr. Haden Corser at the Dalston Police Court on that ground, but the council had it still under consideration whether they should not carry the matter to a higher Court, and obtain a judge's decision upon the matter. Hood was stopped by one of the coal officers while he was hawking what he alleged to be sacks containing hundredweights and half-hundredweights of coal, which, on being weighed, were found to be from 1 lb. to 24 lbs. short of those weights. Hood pleaded "guilty," and Mr. Hannay imposed a fine of 40s., with the alternative of one month's imprisonment.

Edward Hicks, a carman in the employ of the Wombwell Main Coal Company, Cambridge Street, King's Cross, who appeared to answer two summonses charging him with similar offences, had to pay a fine of 10s. on each summons, or in default 14 days' imprisonment.

At Wandsworth, Mr. Denman has heard a number of summonses against coal dealers at the instance of the London County Council for selling coal of short weight. Mr. C. A. Roberts supported the summonses on behalf of the Council, and said the proceedings had been taken under the new Weights and Measures Act of 1889, which enabled an officer of the local authority to enter a house and stop a vehicle and weigh the coal. Mr. Denman thought it was an excellent enactment, and was glad to know that the County Council had resolved to enforce the provisions. John Robinson, carman to Messrs. Blackman & Son, Lothbury Junction, was fined 10s. and costs; William Booth, carman to Messrs. Rickett & Smith, coal merchants, 10s. In the case of Henry Hudson it was stated that his employers, Messrs. Herbert Clarke & Co., adopted every precaution to provide proper weight. Mr. Denman said he had no reason to doubt the truth of that statement. He imposed a penalty of 8s. with costs. Three carmen in the employ of Mr. John Neal, of New Wandsworth, were fined 10s., 8s., and 15s. respectively. Charles Green, a coal merchant, of 6, River Street Putney, was fined £2 for a deficiency of 33 lbs. in two sacks of coals of 1 cwt. each.

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INQUESTS.

The Feeding of Infants.

Mr. John Graham, coroner of South Shields, recently held an inquest concerning the death of a child named James Brownlow, aged four months. Alice Brownlow, mother of the deceased, stated that the child had been fed on bread boiley and arrowroot biscuits since two or three days after its birth. Witness stated that her mother first gave the child boiley, and she continued to feed it in the same way, because she knew no better. The child was insured when about three weeks old. Ellen Wilford, residing at 74, Church Street, Boldon Colliery, said she was the mother of Alice Brownlow, and had heard what her daughter had stated about the way in which the child was fed. It was true that she fed the child on boiley, and also that she told her daughter to do the same. The Coroner: Have you never read how bad a thing it is to feed young children on boiley? No. Witness, in answer to further questions, said she did not know that young children should be fed upon mother's milk, if it could be had, and if not, upon cow's milk. She had fed all her children upon boiley. One of her children died when nine months old, but she never gave it boiley. The Coroner: Then the others lived in spite of it. Dr. J. F. Armstrong said he and his assistant visited the child, and found it was being "starved from want of proper food." He told the mother how to feed it, and informed her that the child was wasting away. The next day he was told that the child was dead. He questioned the mother and was told that the child had been fed on arrowroot and bread boiley. He had no doubt whatever that the child died from wasting from improper food. When babies were registered the parents were supplied with printed instructions how to feed them. Up to three or four months the proper food was mother's milk, or cow's milk and boiling water, in the proportion of two parts of milk and one of water. The Coroner, addressing the jury, said he believed the pernicious system of infantile insurance would be put a stop to by-and-bye. Their position was this:—If there had been evidence that either of the women knew that feeding an infant on boiley would shorten its life, their duty would have been very plain and simple, that was, to commit one or both of them, according to the circumstances, to Durham Assizes for trial for manslaughter. On the evidence before them, there was no admission that they, or either of them, knew that feeding on boiley was pernicious; on the contrary, the grandmother gave them an instance of bringing up a family on boiley. In the face of such evidence, they could not deal with the women in the way he had indicated; all they could do was to call their attention to the evidence of Dr. Armstrong, and warn them that if they again came before a jury they would not have the benefit of ignorance of the fact that boiley feeding was pernicious. The press, he had no doubt, would do as they had done before in such cases. It was not like stale news; each case was a fresh case, and there was always a class of people who had not heard before what they might hear now. There was a time when both coroner and jury were ridiculed for condemning boiley feeding. They had outlived that, and were supported both by the medical profession and the press, and there was now an entirely different feeling abroad. The jury then, on the advice of the coroner, returned a verdict to the effect that the child had died from diarrhœa and wasting, the result of improper feeding. The female witnesses were reprimanded by the Coroner.

The Dangers of Transfer Pictures.

Dr. Macdonald, M.P., recently held an inquiry at Shoreditch respecting the death of James Cherry, aged 10 years. Jane Cherry, the mother, stated that on Monday last her son was in excellent health, but on his coming home from school in the afternoon he was seized with sickness and diarrhœa. The next day he was worse, and she called in Dr. Bird, but the boy died shortly after the doctor had seen him. Witness said that she knew nothing to account for the sickness, though she was aware that the children had had some transfer pictures. William Thong stated that he used to play with the deceased. He saw Cherry with some transfer pictures, which he wetted by putting them in his mouth. Dr. Henry Bird stated that he had made a post-mortem examination. In the heart he found a clot of blood, and these symptoms led him to think that there had been some irritant poison taken. Witness purchased some transfer pictures similar to those which deceased had used, expecting to find arsenic in them. He, however, found no arsenic, but in the red pictures he found lead, which, though not a virulent poison, was dangerous, and ought not to be used. This lead had acted upon the juices of the stomach, and caused the irritation which set up the diarrhœa. The cause of death was the presence of the clot of blood in the heart. The jury returned a verdict in accordance with the medical evidence.

PARLIAMENTARY PAPERS ON SANITARY SUBJECTS PUBLISHED SINCE MAY 15, 1890.

(*To be had of* Messrs. P. S. King & Son, 5, *King Street, Westminster, S.W.*)

Alkali Works.—Report of Inspector for 1889. Twenty-sixty Annual. 8vo. ..... 9d.

Public Health. Report from the Select Committee on the Public Health Acts Amendment Bill; with the Proceedings of the Committee ..... 1d.

Bills.

Drainage Separation. (Stephens) ..... 1d.
Housing of the Working Classes Acts Consolidation (Ritchie) ..... 8½d.
Housing of the Working Classes Amendment (Ritchie) 2½d.
Midwives Registration. (F. Pease) ..... 2d.
Public Health Acts Amendment. (Amended) ..... 3d.
Working Classes' Dwellings. (From Commons) ... 1d.

CORRESPONDENCE.

Audi alteram partem.

[*All communications must bear the signature of the writers, though not necessarily for publication.*]

DEFECTS IN THE PUBLIC HEALTH ACT, 1875.

It would appear to be a futile measure to further attempt to convince your correspondent John Houghton of the error of his deductions from the reading of my paper on the above subject.

Inspectors will, I doubt not, have the prescience to ascertain that they are duly authorized and appointed to carry out the duties of surveyor before they enter upon any legal proceedings, where the latter officer is named in the Act.

I referred to the difficulty of enforcing a water supply to isolated houses in urban districts. My experience and that of many other inspectors of urban districts is entirely at variance with your correspondent.

My paper was distinctly confined to criticism of the Public Health Act, 1875, and if the writer is still unable to see, like Mr. Houghton, that this must necessarily include the criticism of the dozen or more Public Health Acts which have been passed since 1875, well, he must be left to conclude that the writer has been gifted with less fertility of imagination than he possesses.

C. C. Smith, M. San. Inst.,
Skipton. Certified Surveyor and Inspector.

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THE drainage at Laira and Egg Buckland, in the Plympton rural sanitary district seems to be very inadequate, and we have the authority of the medical officer of health for stating that there is likely to be a serious epidemic of fever at no distant date unless a proper system of drainage and water supply is provided.

INTERNATIONAL CONGRESS OF HYGIENE.—The Sanitary and Special Purposes Committee have recommended that Captain Walter H. James, chairman of that committee, and Sir V. H. B. Kennett-Barrington, be appointed to serve on the General Committee for organizing the holding of the International Congress of Hygiene and Demography to be held in London in 1891.

THE SEWAGE OF LONDON.—The offer of the Native Guano Company, Limited (the A B C sewage process) to treat the whole of the sewage of the metropolis, and entirely dispose of the sludge for the sum of £250,000 per year, recently made to the London County Council, has been referred to the Main Drainage Committee for consideration, and it is not likely that any action will be taken for some time to come.

THE Governors of St. Mungo's College, Glasgow, have appointed Professor Glaister, M.D., D.P.H.Camb., &c., and Dr. John C. M'Vail, of Kilmarnock, Member of the Institute of Hygiene of France, D.P.H.Camb., lecturers on Hygiene and Public Health in the College. The dual appointment has been made with the desire of giving complete education on public health, and for the same purpose the Governors are fitting up a complete laboratory for the practical work on subjects relating to public health, such as analysis of water, air, food, &c., and physics, meteorological instruments, sanitary appliances, and microscopy.

NOTICES OF MEETINGS.

THE SANITARY INSTITUTE.

Parkes Museum, 74A, Margaret Street, W.

AT a meeting of the Council, held May 14, Sir Douglas Galton, K.C.B., F.R.S., in the chair, a scheme was adopted for establishing periodical examinations for inspectors of nuisances at various centres throughout England.

Mr. Arthur Cates, F.R.I.B.A., Alfred E. Harris, L.R.C.P., L.R.C.S., and S. W. North, M.R.C.S., F.G.S., were elected Fellows. Four Members and 24 Associates were also elected. Twenty-three applications were read for election at the next meeting.

THE ASSOCIATION OF PUBLIC SANITARY INSPECTORS OF GREAT BRITAIN.

NORTH-WESTERN DISTRICT.

SYLLABUS OF LECTURES, PAPERS, &c., SESSION 1890–91.

1890.

Sept. 13.—Proposed Visit—place not fixed.

Oct. 11.—Lecture: "Sanitary Enterprise, viewed in relation to the past, present, and future." By Dr. J. M. Fox, M.O.H., Mid-Cheshire Combined Sanitary Districts.

Nov. 8.—Paper: "Food, and the law relating to it." By Mr. Thos. Turner, District Sanitary Inspector, Liverpool.

Dec. 13.—The Annual Dinner and President's Address.

1891.

Jan. 10.—Paper: "Criticisms of the Model Building Regulations of the Local Government Board." By Mr. James G. Anderson, Building Inspector, Wallasey Local Board.

Feb. 14.—Paper: "The Housing and Diseases of Cattle, and their Effect on our Milk Supply." By Mr. John Gerrard, Sewage Farm Manager, &c., Woolton Local Board.

Mar. 14.—Lecture: "Sanitary Education." By H. P. Boulnois, Mem.Inst.C.E., City Engineer, Liverpool.

April 11.—Fourth Annual Meeting.

The ordinary monthly meetings of the Association are held on the second Saturday of the month at 6 P.M., in the Class Room, Free Library, William Brown Street, Liverpool. Monthly meetings of the Council are held in the above room at 5 P.M. previous to the ordinary meetings.

A. TAYLOR, Sanitary Inspector, Wallasey, Hon. Sec.,
16, Walmsley Street, Egremont, Cheshire.

From whom any information concerning the Association may be obtained.

THE fifty-eighth annual meeting of the British Medical Association will be held at Birmingham on Tuesday, Wednesday, Thursday, and Friday, July 29, 30, 31, and August 1, 1890.

The following are the particulars so far as announced of Section D., Public Medicine:—

President: ALFRED HILL, M.D. *Vice-Presidents*: John Burges Welch, M.B.; A. S. Underhill, M.D. *Honorary Secretaries*: Louis C. Parkes, M.D., 61, Cadogan Square, S.W.; Sidney Barwise, M.B., Clough View, Blackburn.

The following topics for papers have been suggested as likely to lead to useful and interesting discussion:—

1. Prevention of Pollution of Rivers (*a*) by Paper Works; (*b*) by Dye Works.
2. Smoke Abatement.
3. Lead Poisoning from Water.
4. Methods of Disinfecting Air from Small-pox Hospitals.
5. Treatment of Sewage.
6. The Compulsory Notification Act.

The following papers have been announced:—

Fletcher, Wilfred W. E., M.B., B.A.Cantab. Medical Officers of Health and Infectious Diseases in Board Schools.

Gordon, Surgeon-General C. A., M.D., C.B., Q.H.P. The More Recent Phases of the Hydrophobia Controversy.

McLintock, James, M.D., B.Sc. The Electrical Treatment of Sewage.

Mumby, B. H., M.D., D.P.H. The Compulsory Notification Act.

Seaton, Edward, M.D., F.R.C.P. Clinical Instruction at Fever Hospitals in connection with the operations of the Compulsory Notification Act.

Sergeant, Edward, L.R.C.P., D.P.H. The Prevention of Pollution of Rivers.

Thomson, Theodore, M.A., M.B., D.P.H. (Sheffield). Lead Poisoning from Drinking Water.

Thresh, John C., M.B., B.Sc. Pollution of Streams from Paper Refuse.

Thursfield, W. N., M.D., D.P.H. The Etiology of Outbreaks of Typhoid Fever in Rural England.

Walley, Thomas, Principal Royal Veterinary College, Edinburgh. Meat Inspection.

Warner, Francis, M.D., F.R.C.P. The Examination and Report upon the Condition of Children in Schools.

THE METROPOLITAN PUBLIC GARDENS ASSOCIATION.

A MEETING of members was held at 83, Lancaster Gate, on June 4, at which the Earl of Meath announced that, subject to the approval of the finance committee, the London County Council had agreed to maintain eleven open spaces still in the hands of the Association, until October 1892. The abandonment of the London and North-Western Railway Company's Bill, owing to the opposition to that clause in it which threatened Euston Square, was reported, and it was announced that a petition in favour of securing the Hackney Marshes for public recreation was before the Board of Agriculture; that the Ecclesiastical Commissioners were being asked to reserve an open space in Fulham; that the ground adjoining the Victoria Docks Congregational Church had been thrown open and provided with seats by the Association; that bay trees in boxes had been accepted for the front of the National Gallery; that a playground in Bath Street, Clerkenwell, was to be opened on Saturdays, and that the Open Spaces Bill had passed the House of Lords. It was decided to offer seats for King Street, Hammersmith; St. John's Churchyard, Waltham Green, and St. Mary the Virgin's Churchyard, Aldermanbury, and trees for a space in Cleveland Street, W.; to write to the Hackney District Board of Works with reference to a plot of land between the North and South Mill Fields, Clapton; to offer to lay out the Cross Bones disused burial-ground, Southwark, and to assist in certain other schemes for the promotion of open spaces. The Association is about to lay out the disused burial-ground of St. Bartholomew's Hospital in Seward Street, Goswell Road, and has contributed £50 towards the laying out of St. James' Churchyard, Clerkenwell, E.C.; and, amongst other spaces which it is hoped may shortly be laid out are the churchyards of Christ Church, Spitalfields, St. James', Ratcliff, and Allhallows, London Wall.

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SANITO-PARLIAMENTARY.

HOUSE OF COMMONS.—May 13.

Richmond Barracks, Dublin.

Mr. G. Elliot asked the Secretary of State for War whether the Richmond Barracks in Dublin had been passed as healthy; whether an officer of the 2nd Battalion, the King's Royal Rifles, quartered in these Barracks, had recently been attacked by typhoid fever; and whether the barracks were now in a satisfactory sanitary condition.

Mr. E. Stanhope.—I am sorry to say that an officer in these barracks was recently attacked with enteric fever. He had been on leave on three occasions during the previous month, and it is therefore possible that the disease was not contracted in the barracks. A good deal has recently been done to the drainage of Richmond Barracks, but until the works immediately contemplated are complete, I cannot say that I am satisfied that every effort has been made to avert the recurrence of this disease.

May 16.

Fish in the Metropolis.

Mr. Howell asked the First Lord of the Treasury whether his attention had been called to some very remarkable statements made by Mr. 'J. Lawrence Hamilton, M.R.C.S., respecting the fish supply of the metropolis, the deficiency of its markets, the enormous waste and the spoiling of fish—often delivered in a bad and even putrid state under the present system—increased cost, amounting to hundreds per cent, paid by the consumer, chiefly owing to rings of market middlemen, who pay only a fractional part to the fishermen. And whether, in view of the facts stated, and the general abuses in connection with the fish trade, he would advise Her Majesty to issue a Royal Commission to inquire into the matter, and report as to the best means for protecting the interests of the fishermen, for cheapening and increasing the fish supply, to improve its quality, and generally as to the advisability of further fish market accommodation in the metropolis.

Mr. W. H. Smith said he was informed that the statements contained in the question were, to say the least, highly coloured. Many of the questions raised by Mr. Hamilton had already been inquired into, and no more light could be thrown upon the subject by the appointment of a Commission. With regard to the fish markets it appeared that the new had failed to compete with the old. It was a fact that notwithstanding that two fish markets had been started in the metropolis, Billingsgate still maintained its position. The fish condemned in 1889 only amounted to one in 334.

May 19.

The New Offices of Westminster Hall.

In answer to Dr. Tanner,

Mr. Plunket said,—It is not the fact that fireplaces without chimneys have been constructed to the new offices off Westminster Hall, now used as the Private Bill Offices, but owing to the change in the appropriation of the whole of the rooms in the new building, certain expensive warming and ventilating arrangements, which were originally intended to meet the requirements of the rooms, if used as committee-rooms, were not fully carried out. Some additions are, however, about to be made to the extracting flues, which will enable the rooms to be suitably ventilated for the purposes for which they are now used. It was at one time intended to use gas fires in the new fireplaces, but as the whole of the rooms have now been warmed by steam pipes in the same manner as the rooms recently vacated by the departments now occupying the new rooms, it has been found to be unnecessary to adopt these fires. The Office of Works is responsible for the fireplaces and fittings, and the fact of their having been provided renders the rooms fit for any future occupation in case of change. It is impossible to give the cost of the said fireplaces and flues separately from that of the building, as they were constructed as part of the latter, and in that way they certainly cost very much less than would be necessary to form them at a future time if they should be required.

May 20.

Barrack Hospitals.

In answer to Dr. Tanner,

Mr. Stanhope said,—The hospital accommodation at the Curragh and at Belfast will be enlarged in accordance with modern sanitary rules; and, wherever barracks are constructed, any hospital accommodation which may be required in connection with them will be built after the most approved modern methods.

The Housing of the Working Classes.

Mr. Ritchie introduced Bills to amend and consolidate the Acts relating to Artisans' and Labourers' Dwellings and the Housing of the Working Classes.

May 21.

The Buildings Sanitary Registration Bill.

The order for the second reading of the Bill was read and discharged, and the Bill withdrawn.

May 22.

Notification of Infectious Diseases.

In answer to Mr. Brunner,

Mr. Ritchie said,—The Board have been informed that 469 urban sanitary authorities, 331 rural sanitary authorities, and 18 port sanitary authorities have adopted the Notification of Infectious Diseases Act, 1889. This makes a total of 818 authorities who have adopted the Act. The total number of urban, rural, and port sanitary districts is 1,624.

Mr. Brunner asked whether there were any hope that the Act would be made compulsory throughout the country next Session.

Mr. Ritchie.—No doubt the time will arrive when it must be considered whether the Act ought not to be made compulsory; but I doubt whether it can be done so soon after the passing of the Act.

In reply to a further question by Mr. Brunner,

Mr. Ritchie said,—The population, according to the Census of 1881, of the districts of which the Act is in force, exclusive of the metropolis, is 15,463,000. There are also 56 towns, with a population of 3,751,000, where, under the provisions of local Acts, the system of notification is in operation. The result is that out of a total population, according to the Census of 1881, of 25,970,000, the population subject to a system of notification is now 19,214,000.

May 23.

Bow Cemetery.

In answer to Mr. C. Graham,

Mr. Matthews said,—The resolution of the Mile End Vestry, which was in favour of closing Bow Cemetery, was referred by me to the Inspector of Burial Grounds, and he reports that, though the cemetery is gradually filling up, there is still room for common graves to be made. The cemetery has been placed under regulations sufficient to prevent any injury to the public health, and the inspector has instructions to satisfy himself by occasional visits that these regulations are duly and fully observed.

The "Destructor" in Lambeth.

In reply to Mr. Pickersgill,

Mr. Ritchie said,—I am informed by the Commissioners of Sewers of the City of London that the inquiries which they have made lead to the conclusion that the noisome smoke nuisance complained of does not proceed from the chimney of the destructor belonging to them which is situated at Lett's Wharf. The Vestry of Lambeth, within which parish is the wharf referred to, state that there appears to be little doubt that smoke issues from the chimney of the destructor, which gives out a faint, sickly smell, but the vestry have never been able to obtain from the medical officer of health a statement that such smell is dangerous to health. In the absence of this evidence the vestry have been unable to take any action except to keep a watch on the wharf from time to time. Looking to these replies I will direct one of the inspectors of the Local Government Board to inquire and report to me on the subject.

Replying to a question by Mr. S. Hill as to whether he would allow memorials to be sent to him on this subject,

Mr. Ritchie said he would be glad to receive any information on the question.

Reports of Medical Department of Local Government Board.

In answer to Mr. Rowntree,

Mr. Ritchie said,—The Local Government Board only receive a limited number of copies of their medical officer's reports, which they distribute among those medical officers of health who have taken a special interest in the matters dealt with. I am fully aware that the reports referred to would be of considerable assistance to the medical officers of health in connection with their duties, and I think that the sanitary authorities would be justified in purchasing copies for the use of the authorities and their officers.

May 24.

Maintenance of Streets and Footpaths.

Mr. Ritchie, in answer to Mr. Hobhouse, referring to the recent decision in the Warminster case, said the Court placed an interpretation upon sections 13 and 15 of the Highways Act at variance with that usually adopted prior to the passing of the Local Government Act, by which it was not intended to throw upon County Councils the whole cost of maintaining "inland" streets and footpaths. He was unaware whether there would be an appeal against the decision. Meantime, the full judgment would be considered by the Local Government Board; as yet, he had only seen a newspaper report.

June 6.

Physical Education.

In the debate on the New Education Code,

Mr. More drew attention to the question of physical education, and pointed out that last year a conference of Frenchmen interested in introducing English and American games into France met in Paris. A society was formed, and details were given of experiments as to the relative effect of physical education and drilling on children of the same age. It was stated that children exercised in the school with Indian clubs, horizontal bars, &c., had increased in breadth of chest two inches, while other children in similar circumstances had increased only half an inch through drilling. It was satisfactory to observe that the

taste for physical exercises was spreading in the metropolis. No doubt the details of carrying out and extending physical education in our schools called for great consideration, but if the Vice-President could see his way to making a further grant on this head their indebtedness to the right hon. gentleman would be greatly enhanced.

BILLS IN PARLIAMENT.

The Mortmain Laws.

Under the mortmain laws land may not be assured to a corporation in mortmain, unless there be a licence from the Queen to hold land in mortmain, or it be authorized by some statute. So also the conditions under which assurances of land, or of personal estate to be laid out in land, may be made for the benefit of any charitable uses are very stringent. For instance, unless the assurance is given in good faith for full and valuable consideration, it must be made at least 12 months before the death of the donor. A Bill, introduced by Mr. Knowles, M.P., proposes to exempt from these regulations any assurance, whether by deed or by will, of land or of personal estate to be laid out in land for the purpose of providing dwellings for the working classes in any populous place. However, the quantity of land which is permitted to be thus assured by will is limited to five acres. Moreover, the assurance must be enrolled in the books of the Charity Commissioners within six months in the case of a deed after its execution, and in the case of a will after the probate. By the expression, "populous place," is meant the administrative county of London, any municipal borough, any urban sanitary district, or any other place having a dense population of an urban character.

Protection of Life and Property.

The provision of fire escapes in certain buildings is proposed to be made compulsory by a Bill introduced by Mr. Dixon-Hartland, M.P. The duty of providing them is imposed on the owner in fee or for life of every hotel, factory, workshop, store, warehouse, theatre, tenement house, college, school, hospital, asylum, hall, or place of public resort or amusement; also on the trustees of any association, the guardians of the poor governing any workhouse, &c.; also on the owners of all buildings 40 ft. high, in which four or more families reside; likewise on the owners of all places of business 40 ft. high, where the *employés* to the number of 12 or more sleep on the premises; and, moreover, on the "owners of all other buildings for any of the purposes above mentioned." The fire escape, which is required to be fixed to the outside of the building, is to be of iron, and to be when in use of the form of stairs at an incline of not less than 35 deg. It must, however, be of such simple construction as to be used by a youth or old person of either sex; and it must receive the approval of the County Council. Another provision of the Bill is that the hall-ways and stairways in the above mentioned buildings are to be properly lighted when occupied at night, and at the head and foot of each flight of stairs and at the intersection of all hall-ways with main corridors a red light is required to be kept during the night. One or more proper alarm bells or gongs capable of being heard throughout the buildings are to always remain easy of access, and ready for use in each building to give notice to the inmates in case of fire. Another requirement is that there be kept posted in a conspicuous place in every sleeping room a large notice descriptive of the means of escape. All these matters are to be subject to the control of County Council officers who are to be appointed to enforce the Bill. For neglecting to provide a fire escape after receiving notice, a penalty of £5 per day is imposed, and, in case of fire occurring in a building not provided with the required appliances, the negligent persons are to be liable to pay damages in case of death or personal injury being caused in consequence of the fire. The action at law may be maintained by any person now authorized to sue as in other cases for injuries caused by neglect of duty. No gas dangerously inflammable, or mineral oil or fluid, is to be used for any illuminating purposes directed by the Bill; fish or vegetable oil only is to be used. All lamps required to be kept burning all night are to be protected by a strong galvanized wire mask locked to the wall. Among the special precautions required to be taken in theatres and other places of public resort or amusement is the making of the doors to hinge outwards, the use of divided doors where it is practicable, a special door on every floor leading to each fire escape, &c. It is forbidden for any chairs, stools, or other articles to be placed on any gangway or passage. For every such building a fireman with specified duties is required to be appointed. One direction is for inspectors to be appointed by county councils to see that the Bill is carried out; and proceedings for enforcing penalties are to be taken by the County Council's solicitor.

The Infectious Diseases Bill.

The promoters of the Infectious Diseases Bill have decided to abandon Clause 6 of that measure requiring laundrymen to give up a list of their customers on the demand of the medical officer of health.

Insurance of Children.

The evils connected with the insurance of children's lives are dealt with in a Bill introduced into the House of Lords by the Bishop of Peterborough. He proposes to place a more stringent limit on the amount of the sum for which an insurance may be effected for a child. When added to any sums payable on the child's death by any other societies, it is prohibited in the Bill from exceeding £4 on the death of a child under 5 years of age. The limit is fixed at £6 for a child between 5 and 10; and at £8 for a boy over 10 and under 14, or for a girl over 10 and under 16 years of age. A second provision is that a society is forbidden to pay the insurance money to any one but the undertaker; and on payment a special certificate of death must be produced. This certificate must state the amount of the sum claimed and the name of the society from which it is claimed. As these certificates are to be numbered, the society can see whether a certificate purports to be the first; and if it does not, they are bound to inquire what sums have been paid or are payable on the same death by any other society. No certificate whatever of this kind is to be given by a registrar unless the cause of death has been previously entered in the register of deaths on the certificate of a medical practitioner who attended the child during its last illness, or of a coroner; or unless a certificate of the probable cause of death signed by a medical practitioner is produced to the registrar, or some other satisfactory evidence of this. If a society contravenes the Bill it is to be liable to a fine of £50. Moreover it is made a misdemeanour, punishable with three months' imprisonment with or without hard labour, where any member, officer, or agent, does so; or where any person claiming the insurance money produces or attempts to obtain a false certificate; or where the recipient of the money pays a part to any one which is not *bond fide* due on account of burial fees or for services rendered or for articles supplied in connection with the funeral; or where any one claims or receives a sum the payment of which constitutes an offence under the Bill; or even where a person attempts in any way to defeat the provisions of the Bill. The Bill is not intended to prohibit insurances on the lives of children where the person insuring has an interest in the life of the person insured. As regards existing contracts, the amount to be paid on a death is not affected by the Bill, but only the person to whom it is to be paid. Ordinary life assurance companies are permitted by the Bill to insure children's lives where there is no "insurable interest," just as much as friendly societies and trade unions.

LOCAL INTELLIGENCE.

The Coventry Board of Guardians have increased the salary of Mr. James Arch, as clerk to the Guardians, from £155 to £200 per annum, the amount paid to his predecessor.

Mr. William Arthur Poole has been appointed inspector of weights and measures for the Bedfordshire County Council at £120 per annum.

The Chilvers Coton Local Board have increased the salary of Dr. Peacock, their medical officer, from £12 10s. to £20 per annum in consequence of the devolution of extra duties upon him.

Excessive Mortality near Gainsbro'.—The Local Government Board recently wrote to the Gainsbro' Board of Guardians asking for an explanation of the cause of the deaths of eleven people at Scotter which had been attributed to the insanitary condition of the village. The medical officer replied that the deaths were all of aged people, and resulted from acute pneumonia, which had become infectious in character, but could not be attributed to defective drainage or any insanitary conditions.

The following have been appointed Inspectors of Weights and Measures to the London County Council:—G. S. Finnigan, J. W. Hildrith, S. B. Hough, R. K. Reid, and J. P. Stubbs.

APPOINTMENTS.

Medical Officers of Health.

Adams, Frederick Edward, M.D., M.Ch., M.A.O., L.A.H.Dub., D.P.H.Cam., has been appointed Medical Officer of Health and Public Analyst to the Borough of Bolton, *vice* Dr. Edward Sergeant, at a salary of £400 per annum.

Atkinson, Francis Edward, L.R.C.P.Lond., M.R.C.S.Eng., has been re-appointed Medical Officer of Health to the Craven Comb (Skipton Rural) District for three years.

Bott, Henry, L.R.C.P., M.R.C.S., has been re-appointed Medical Officer of Health to the Brentford Urban Sanitary District, at a salary of £75 per annum.

Brockway, Archibald Birt, M.R.C.S., L.R.C.P., has been appointed Medical Officer of Health to the town of Muttaherra, Queensland, *vice* Dr. Wilkie, resigned.

Browne, Samuel, M.D.Qu.Univ.Irel., and M.Ch., has been appointed Medical Officer of Health to the Leamington Priors, *vice* J. S. Baly, M.R.C.S., L.S.A., deceased.

Burdwood, James Watson, L.F.P.S.G., L.M., L.S.A.Lond., M.San.Inst., has been re-appointed Medical Officer of Health for the Bourne Rural Sanitary District.

Erskine, Robert, M.D.Qu.Univ.Irel., M.Ch., and L.M., has been re-appointed Medical Officer of Health to the Camborne Local Board, at £50 per annum.

Farr, Septimus Briggs, L.R.C.P.Edin., M.R.C.S.Eng., has been re-appointed Medical Officer of Health to the Andover Urban Sanitary Authority.

Finlay, David W., B.A., M.D., D.P.H.Camb., F.R.C.P.Lond., has been appointed Medical Officer of Health to the Harrow Local Board, *vice* T. W. Thompson, resigned, at £50 per annum.

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GAYLOR, Edward, L.R.C.P.Edin., L.M., L.F.P.S.Glas., has been re-appointed Medical Officer of Health to the Ripley Urban Sanitary Authority.

HOBBES, J. L., L.R.C.P.Edin., L.M., M.R.C.S., has been re-appointed Medical Officer of Health to the Bromsgrove Rural Sanitary Authority.

HORSFALL, Henry, M.D.St. And., M.R.C.S., has been re-appointed Medical Officer of Health to the Bedale Rural Sanitary Authority, at £60 per annum.

HUBBARD, F. E., L.R.C.P.Lond., M.R.C.S.Eng., L.S.A., has been re-appointed Medical Officer to the Diss (Norfolk) Local Board of Health.

HUSBAND, C., M.R.C.S., L.S.A., has been re-appointed Medical Officer of Health to the Ripon City Council.

IRELAND, Thomas, L.R.C.P., L.R.C.S.Edin., L.F.P.&G.Glas., has been appointed Government Medical Officer of Health, British Guiana.

KELLY, Charles, M.D.Lond., F.R.C.P.Lond., M.R.C.S.Eng., has been appointed Medical Officer of Health to the West Sussex Combined District, at a salary of £630 per annum, or with Arundel £650.

LIVETT, H. W., L.R.C.P.Edin., M.R.C.S.Eng., has been re-appointed Medical Officer of Health to the Wells Urban Sanitary District, at a salary of £40 per annum.

LOWNDS, H. A., L.R.C.P., L.R.C.S.Edin., has been re-appointed Medical Officer of Health to the Farnley Tyas Local Board.

LOYND, William, M.R.C.S.Loud., L.K.Q.C.P.I., has been appointed Medical Officer of Health to the Oswaldtwistle Urban Sanitary Authority, *vice* A. T. Townley.

LUMSDEN, Geo., M.B., C.M.Glas., has been appointed Medical Officer for the Pateley Bridge Rural Sanitary District, *vice* Mr. Jardine.

MOORE, George R., M.R.C.S., has been appointed Medical Officer of Health for the shire of Yarrawonga, Victoria.

MORISON, John, M.D., M.R.C.S.Eng., D.P.H.Camb., has been appointed Medical Officer of Health to the St. Alban's Rural Sanitary District, *vice* Dr. W. Thompson, at £100 per annum.

MORRISON, Reginald H., M.B., C.M.Edin., has been appointed Medical Officer of Health for the shire of Oakleigh, Victoria.

MOXON, Jas. Burdett, M.R.C.S.Eng., L.S.A., has been re-appointed Medical Officer of Health to Brigg Rural Sanitary Authority.

MUNRO, Archibald Campbell, M.B., B.Sc., C.M., L.R.C.P., has been appointed Medical Officer of Health to the Borough of Jarrow.

PRIDEAUX, T. E. P., L.R.C.P.Lond., M.R.C.S.Eng., L.S.A., has been re-appointed Medical Officer of Health to the Wellington Rural Sanitary Authority.

RICHMOND, Richard, M.B., C.M.Edin., has been appointed Medical Officer of Health to the Dunmow Rural Sanitary Authority, *vice* Basil Ronald, at £50 per annum.

ROBINSON, Alfred, M.D., has been appointed Deputy Medical Officer of Health to the Rotherham Town Council.

SKINNER, Ernest William, M.B., C.M.Edin., has been appointed Medical Officer of Health to the Rye Union Rural Sanitary Authority, *vice* Drs. Woodhams, Harris, and R. V. Skinner, at £60 per annum.

SMITH, Robert, L.R.C.P., F.R.C.S.Edin., has appointed Medical Officer of Health for Avenel, Victoria.

THURSFIELD, William Nealor, M.D.Edin., M.R.C.S.Eng., has been appointed Medical Officer of Health to the County Council of Shropshire.

WIGIN, George William, M.R.C.S.Eng., L.S.A., has been re-appointed Medical Officer of Health to the Methley Urban District, at a salary of £25 per annum.

WILSON, A. S., M.A., M.B.Camb., M.R.C.S.Eng., has been appointed Medical Officer of Health to the Hastings Urban Sanitary Authority.

WOODFORD, E. R., M.D.Aber., M.R.C.S., L.S.A., has been re-appointed Medical Officer of Health to the Ventnor Local Board.

POOR-LAW MEDICAL OFFICERS.

ALFORD, Charles Edward, M.R.C.S., L.S.A., has been re-appointed District Medical Officer to the Yeovil Union for three year.

AYMER, James, M.B.Edin., C.M., has been re-appointed Medical Officer to the Parochial Board of Bervie.

BECKER, J., M.B.Edin., C.M., L.R.C.P.Lond., has been appointed Medical Officer to the 1st Ward of the Colchester Union, at £100 per annum and fees.

BENSON, Henry Thomas, L.S.A., has been appointed Medical Officer for the St. Nicholas 2nd District of the Spalding Union.

BUNCOMBE, William Dewey, L.R.C.P., M.R.C.S., has been appointed Assistant Medical Officer to the Infirmary of the City of London Union, Bow Road, *vice* William Gem, L.R.C.S.I., L.K.Q.C.P.Irel., L.M., resigned, at £100 per annum.

COLLINGWOOD, J. E., L.R.C.P.Edin. and Lon., M.R.C.S.Eng., has been appointed Deputy Medical Officer for the Ropeley District of the Grantham Union, *vice* Dr. H. B. Bailey, resigned.

COURTENAY, Kilcoursie J., L.R.C.P., L.R.C.S.Edin., L.F.P.S. Glas., has been appointed Medical Officer to the Workhouse and No. 2 District of the Wimborne and Cranborne Union, *vice* S. G. Parkinson, M.R.C.S., L.S.A., deceased.

CREAGH, William, L.R.C.S.I., L.S.A.Lond., has been re-appointed Medical Officer for Lullington and District, Burton-on-Trent Union.

CULLEN, Dr., has been appointed Medical Officer to the Carrickmacross Workhouse.

FAULKE, Herbert Charles, L.R.C.P., L.R.C.S.Edin., has been appointed Medical Officer for the 3rd District of the Lexden and Winstree Union.

FREEMAN, J. P. W., M.D.Durh., M.R.C.S., has been appointed Medical Officer to the 4th District of the Andover Union.

GEORGE, J. W., M.R.C.S.Eng., L.S.A., has been appointed Medical Officer for the 5th District of the Upton-on-Severn Union.

GILBERTSON, J. H., L.R.C.P.Lond., M.R.C.S.Eng., has been appointed Medical Officer of the 2nd District of the Hitchin Union.

GILLESPIE, William Henry, L.K.Q.C.P.I., L.M., L.R.C.S.I., has been re-appointed Medical Officer and Public Vaccinator to the 4th (West Bradley) District of the Shepton Mallet Union.

HARRIS, Arthur, G. R., L.R.C.P.Lond., M.R.C.S.Eng., has been appointed Medical Officer for the No. 2 Market Weighton District of the Pocklington Union, *vice* Alfred Jackson, L.R.C.P., L.R.C.S.Edin., deceased.

HARWOOD, Charles, M.D., L.R.C.P.Edin., has been re-appointed Medical Officer to the Shardlow District of the Shardlow Union.

HEMBROUGH, John William, M.D.Durh., M.R.C.S., L.S.A., has been appointed Medical Officer to the Earsdon District of the Tynemouth Union, *vice* P. Alexander, L.R.C.P., L.R.C.S. Edin., resigned.

HODGSON, Dr., has been appointed Medical Officer for the Cropedy District of Banbury.

HOLLIS, Elphinstone, M.D.Edin., has been re-appointed Medical Officer and Public Vaccinator for Woodbridge.

HOWARD, Thomas, M.B.Glas., C.M., has been appointed Medical Officer to the Clun Union.

JACKSON, Fox Turner, M.R.C.S., L.R.C.P.Lond., has been appointed Resident Medical Officer to Walton Workhouse, Liverpool.

JOHNSON, S. Pearson, M.B., C.M.Edin., has been appointed Medical Officer to the 7th District of the Bedminster Union.

KENT, Charles A., B.Sc., L.R.C.P.Lond., has been appointed Second Assistant Medical Officer to the Infirmary of the St. Olave's District, at £100 per annum.

KITE, E., Whitfield Dawson, M.B.Durh., M.R.C.S.Eng., L.S.A., has been appointed Medical Officer for the 2nd District of Wortley.

LATTEY, Arthur, L.R.C.P.Lond., M.R.C.S.Eng., has been appointed Medical Officer of the Banstead District of the Epsom Union.

LAWSON, H. A., L.R.C.P. and S.Edin., has been appointed Medical Officer to the City Poorhouse, Edinburgh, *vice* William Lundie, M.B., C.M., M.A., B.Sc., at £80 per annum, with board and lodging.

M'CARTHY, Dr. Geoffrey, has been appointed Medical Officer for the Tuosist Dispensary District, *vice* Dr. Geoffrey M'Carthy, deceased.

MCMASTER, A., L.R.C.P.Edin., has been appointed Medical Officer for the Omagh No. 2 Dispensary District, *vice* John MCCLUNG, L.K.Q.C.P.I., L.R.C.S.I.

MACSWEENY, William, M.D.Roy.Univ.Irel., has been appointed Medical Officer for Killarney.

MARTIN, Matthew, M.B. and C.M.Glasg.Univ., has been appointed Medical Officer of the 3rd or Parkhead Medical District of the Barony Parish, Glasgow, *vice* Dr. William Young, deceased.

MASTERMAN, G. F., L.K.Q.C.P.I., M.R.C.S., L.S.A., has been re-appointed Medical Officer of Health for Stourport.

MOORE, William Daly, L.S.A., has been re-appointed Medical Officer and Public Vaccinator to the Dispensary District of Greatham, Hartlepool Union, at £30 per annum.

MOSSOP, John, M.D., has been appointed Medical Officer for the 4th District and Workhouse of the Cheltenham Union, *vice* H. E. Jessop, L.R.C.P.Edin., deceased.

NICHOLLS, William John, L.R.C.P.Edin., L.M., M.R.C.S.Eng., has been appointed Honorary Medical Officer for the St. Ives Union District.

O'FARRELL, Charles, L.R.C.P., L.R.C.S.Edin., has been re-appointed Medical Officer for the North District of Great Yarmouth Union.

O'LEARY, P. J., L.R.C.P., L.R.C.S.Edin., has been appointed Medical Officer of Health and Public Vaccinator to the Kanturk District.

PALMER, Dr., has been appointed Medical Officer for the Mullaglass (County Armagh) Dispensary, *vice* Dr. Joseph Lightbourne, deceased.

PAPILLON, Thomas Alex., L.R.C.P., L.M.Edin., has been appointed Medical Officer for the Empingham District of the Oakham Union.

PRUEN, Dr., has been appointed Medical Officer to the Workhouse, Cheltenham Union.

ROUGHTON, Walter, L.R.C.P.Lond., M.R.C.S.Eng., has been appointed Medical Officer for the East Barnet Valley District of the Barnet Union.

RYGATE, Reginald, L.K.Q.C.P.I., L.R.C.S.I., has been appointed Medical Officer to the Middleton Cheney District of Banbury.

SIM, James Brown, M.D., L.R.C.S., has been appointed District Medical Officer to the Nottingham Union, *vice* G. B. Powell, deceased, at £100 per annum and fees (£70 to £80).

SPENCER, Walter, L.R.C.P., L.R.C.S.Edin., has been appointed Medical Officer and Public Vaccinator for the Gringley District of the E. Retford Union, *vice* W. K. Lochhead, L.R.C.P., L.R.C.S.Edin., resigned.

STILL, G. C., M.B.Aberd., and C.M., has been appointed Medical Officer for the Sheepshed District of the Loughborough Union.

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Birmingham.

TOMORY, J. Kay, M.B.Edin., has been appointed Medical Officer to the Parish of New Abbey, at £50 per annum.

TUTHILL, Dr., has been appointed Medical Officer to the Portland Dispensary District of the Carrick-on-Suir Union, *vice* Dr. James Martin, deceased.

VALENTINE, E. Wm., M.R.C.S., L.M., L.S.A., has been re-appointed Medical Officer of the 6th District of the Shepton Mallet Union.

WAWN, E. Russell, L.R.Q.C.P.Irel., M.R.C.S.Eng., has been appointed Medical Officer and Public Vaccinator for the Bramley District of the Bramley Union, *vice* Charles Slesser, M.D.Aberd., resigned.

WELCHMAN, Edward, L.R.C.P.Lond., M.R.C.S.Eng., L.S.A., has been appointed Medical Officer and Public Vaccinator for the Heckington District of the Sleaford Union, *vice* W. W. Stables, L.R.C.P.Edin., M.R.C.S.Eng., resigned.

WILSON, J., M.D., has been appointed Medical Officer for the No. 4 District of the Cheltenham Union.

WRIGHT, Thomas Nesbitt, M.R.C.S., L.R.C.P.Lond., has been appointed Assistant Medical Officer to the Plumstead Infirmary, Woolwich Union, *vice* Dr. P. W. Thompson, at £90 per annum.

CERTIFYING FACTORY SURGEONS.

DE DENNE, T. V., M.R.C.S., L.R.C.P., has been appointed Certifying Factory Surgeon to the Cradley Heath and Old Hill District, *vice* Hugh R. Ker, F.R.C.S.Edin., resigned.

SULLIVAN, F. W., L.R.C.S.I., L. and L.M., K.Q.C.P.I., has been appointed Certifying Factory Surgeon to the Navan District.

INSPECTORS OF NUISANCES.

BAILEY, John L., has been appointed Inspector of Nuisances to the Dawley Urban Sanitary District of the Madely Union, *vice* G. Stevenson.

BAINTON, John, has been re-appointed Inspector of Nuisances and Surveyor for the Brigg Rural Sanitary District.

BOOCOCK, John, has been appointed Inspector of Nuisances to the Burley-in-Wharfedale Urban Sanitary Authority, *vice* T. Stradling.

BRIERLEY, F., has been appointed Sanitary Inspector to the Carlton Local Board, at £30 per annum.

JONES, Wm., has been appointed Inspector of Nuisances to the Colwyn Bay and Cobann Urban Sanitary District of the Conway Union, *vice* Owen Williams, resigned.

BRUMWELL, R., has been appointed Inspector of Nuisances to the Little Lever Urban Sanitary District of the Bolton Union, *vice* N. Holden, resigned.

COBBEN, Joseph, has been appointed Inspector of Nuisances to the Southampton Urban Sanitary Authority, *vice* W. J. Tubbs.

CRUMP, T. G., has been appointed an Inspector of Nuisances to the Rural Sanitary District of the Taunton Union.

DEARDEN, HENRY, has been re-appointed Inspector of Nuisances to the Ripon Urban Sanitary District of the Ripon Union.

FALDING, A. E., has been appointed Inspector of Nuisances to the Matlock Urban Sanitary District, of the Bakewell Union, *vice* T. T. Bell, resigned.

GREENWELL, Allen, has been appointed Inspector of Nuisances of the Rural Sanitary District of the Frome Union, *vice* W. Adams.

HALL, John, has been appointed Inspector of Nuisances to the King's Lynn Urban Sanitary Authority.

HARRADINE, S., has been re-appointed Sanitary Inspector to the Hendon Board of Guardians.

HORLEY, William, has been re-appointed Inspector of Nuisances to the Shirley and Freemantle Urban Sanitary District.

JOHN, Christopher, has been appointed Inspector of Nuisances to the Ogmore and Garw Urban Sanitary Authority.

BROWN, J. W. H., has been appointed Inspector of Nuisances to the Southgate Urban Sanitary Authority, *vice* R. Collins, resigned.

LANGDON, G., has been re-appointed Inspector of Nuisances to the Yeovil Rural Sanitary Authority.

LOMAX, Joseph, has been appointed Inspector of Nuisances to the New Mills Urban Sanitary District of the Hayfield Union, *vice* John Warren, deceased.

PALMER, H. A., C.S.I., Shawell, Rugby, has been appointed Inspector of Nuisances to the Corporation of Sheffield, at £2 per week.

RICHMOND, H., has been appointed an Inspector of Nuisances to the Rural Sanitary District of the Taunton Union.

SCOTT, Mr., has been re-appointed Inspector of Nuisances to the Crosner Local Board.

SMITH, Joseph W., has been appointed Inspector of Nuisances to the Carlisle Urban Sanitary Authority, *vice* T. M. Compton.

STRINGFELLOW, H. W., has been appointed Inspector of Nuisances to the Chichester Urban Sanitary Authority.

THACKRAY, James, has been appointed Inspector of Nuisances to the Dewsbury Urban Sanitary Authority, *vice* Thomas Wheat.

THOMAS, John P., has been appointed Inspector of Nuisances to the Lampeter Rural Sanitary Authority, *vice* William Rees.

TITLEY, A. L. T., has been appointed Inspector of Nuisances to the Dorchester Town Council, *vice* Mr. Chick, resigned.

TREPESS, F., has been re-appointed Inspector of Nuisances to the Warwick Rural Sanitary Authority, at £120 per annum.

WHITE, Mr., has been appointed Inspector of Nuisances (Canal Boats and Dairies) to the Banbury Town Council, at a salary of £50 per annum.

PUBLIC ANALYST.

COLWELL, J. K., has been appointed Public Analyst to the Clerkenwell Vestry.

PUBLIC VACCINATORS.

CHRISTIE, William W., M.B., C.M.Glasg., has been appointed Public Vaccinator for the Districts of Woodville and Danevirke, New Zealand.

KITE, E. W. Dawson, M.B.Durham, M.R.C.S., L.S.A., has been appointed Public Vaccinator for the Bradfield District of the Wortley Union, *vice* H. Payne, M.R.C.S., resigned.

MACANDREW, Herbert, M.B., C.M.Edin., has been appointed Public Vaccinator for the District of Hokitika, New Zealand.

POTTS, Walter, A.B., M.R.C.S., has been appointed Public Vaccinator for Serviceton, Victoria.

ROBERTS, J. Black, M.B., C.M.Edin., has been appointed Public Vaccinator to the Nottingham Union, *vice* G. B. Powell, deceased.

TAYLOR, T. P., M.R.C.S.Eng., L.S.A., has been appointed Public Vaccinator to the Braintree Union, *vice* his father.

WOLFENDEN, Jas. J., L.K.Q.C.P., L.R.C.S.Irel., has been appointed Public Vaccinator for St. Arnaud, Victoria.

SURVEYORS.

ALGER, J., has been re-appointed Surveyor and Inspector to the Diss Local Board of Health.

EVANS, Evan, has been elected County Surveyor to the Carnarvon County Council.

FALDING, A. E., has been re-appointed Surveyor to the Matlock (Derbyshire) Local Board.

HOGG, Mr., has been appointed Surveyor to the Aberdeenshire County Council.

SHAKLETON, J., has been appointed Surveyor to the Coseley Local Board.

CLERKS.

ANDREWS, Arthur S., has been appointed Clerk to the Guardians of the Chard Union, *vice* H. Paule, resigned.

BEDFORD, George W., has been appointed Assistant Clerk in the offices of the Guardians of the Parish of St. Leonard, Shoreditch, *vice* F. W. Piper, resigned.

CAMPBELL, J. S., has been appointed Assistant Clerk in the Guardians' Offices of the Greenwich Union, *vice* E. J. Mott, resigned.

COOKE, George J., has been appointed an Assistant Clerk in the Offices of the Managers of the Metropolitan Asylum District.

CURTIS, F. J., has been appointed an Assistant Clerk in the Guardians' Offices of the Wandsworth and Clapham Union, *vice* A. A. Sanders, resigned.

DAVIS, John A., has been appointed Clerk to the Guardians of the Highworth and Swindon Union, *vice* E. G. Bradford, resigned.

HADWICKE, Thomas E., has been appointed Assistant Clerk to the Guardians of the St. Marylebone Parish, *vice* W. J. Cooper, deceased.

HENDERSON, A. N., has been appointed Clerk to the Guardians of the Wandsworth and Clapham Union, *vice* E. H. Taylor, resigned.

HOLLOWAY, H. G., jun., has been appointed Assistant Clerk to the Guardians of the Isle of Thanet Union, *vice* C. Taylor, jun.

LYNN, H., has been re-appointed Clerk to the Diss Local Board of Health.

MACE, J. M., has been appointed Clerk to the Guardians of the Tenterden Union, *vice* C. Mace, resigned.

MACLACHLAN, D., has been appointed Council Clerk to the Argyll County Council, at a salary of £250 per annum.

MOORE, J. W. D., has been appointed an Assistant Clerk in the Guardians' Offices of the Wandsworth and Clapham Union, *vice* A. A. Sanders, resigned.

MOTT, Edward, has been appointed an Assistant Clerk in the Guardians' Offices of the Poplar Union, *vice* F. G. Williams.

MOWBRAY, F. W., has been appointed Assistant Clerk in the Guardians' Offices of the Hartlepool Union, *vice* J. E. L. Spence, resigned.

PIPER, F. W., has been appointed Assistant Clerk of the Wandsworth and Clapham Union, *vice* A. N. Henderson appointed Clerk.

SHIRES, B. A., has been appointed Clerk to the Guardians of the Blaby Union, *vice* J. Sheppard, deceased.

STEPHEN, Mr., has been appointed Clerk to the Aberdeenshire County Council.

TAYLOR, G., jun., has been appointed Clerk to the Guardians of the Isle of Thanet Union, *vice* H. G. Holloway.

TRUMP, William H., has been appointed Assistant Clerk in the Guardians' Offices of the Parish of St. Mary, Lambeth.

TRUSCOTT, Francis, has been appointed Clerk to the Guardians of the Truro Union, *vice* R. Marrack, deceased.

WRIGHT, S. G. E., has been appointed an Assistant Clerk to the Guardians of the Poplar Union.

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RESIGNATIONS.

BEDFORD, Geo. W., Fourth Assistant Clerk of the St. Marylebone Parish.
BROOKING, C. H., M.D.St.And., M.R.C.S.Eng. and L.S.A., Medical Officer of the Stebbing District of the Dunmow Union.
COTTERELL, Edward, L.R.C.P., M.R.C.S., Medical Officer for the Stoke Lyre District of the Bicester Union.
CUTHBERT, William, M.R.C.S., L.S.A., Medical Officer for the Mendlesham District of the Hartismere Union.
FOSBROOKE, Dr. G. H., Medical Officer of Health for the Stratford-on-Avon Rural Sanitary Authority.
GEM, Dr. W., Assistant Medical Officer at the Infirmary of the City of London Union.
LOCHHEAD, William K., L.R.C.P.Edin., L.R.C.S.Edin., Medical Officer of the Gringley District of the East Retford Union.
MORRIS, J., Inspector of Nuisances to the West Ashford Rural Sanitary Authority.
ROBSON, Dr., Medical Officer of the Shilbottle District of the Alnwick Union.
SCHON, J. E., M.R.C.S., L.S.A., Medical Officer of the 4th District of the Bridge Union.
SLINN, W. S., L.S.A., Medical Officer of the Ampthill District of the Ampthill Union.
THOMPSON, T. W., L.R.C.P.Edin., M.R.C.S., L.S.A., Medical Officer of Health to the Rural Sanitary District of the Watford Union.
THOMPSON, Dr. W. P., Assistant Medical Officer at the Infirmary of the Woolwich Union.
VALENTINE, Dr. E., Medical Officer for the 6th District of the Shepton Malet Union.

VACANCIES.

MEDICAL OFFICER OF HEALTH.—The County Council of the North Riding of Yorkshire require a Medical Officer of Health for the Riding, qualified for the practice of medicine, surgery, and midwifery, and holder of a diploma in sanitary science, public health, or state medicine. May hold another appointment, and engage in private practice. Remuneration: a fixed fee of £100 per annum, and 5 guineas per day (to include expenses) for each day's services from home. Applications to W. C. Trevor, Esq., Deputy Clerk, Clerk of the Pease's Office, Northallerton, before June 30.

MEDICAL OFFICER OF HEALTH.—The Board of Guardians of the Wellingborough Union are prepared to receive applications from duly qualified medical practitioners for the appointment of Medical Officer of Health for the Rural Sanitary District of their Union. Salary £50 per annum. Applications to be sent to Mr. William Jackson, Assistant Clerk, Wellingborough, by June 25.

MEDICAL OFFICER.—The services of a Medical Officer are required for the Parish of Farr, Sutherland; to be located at Bettyhill. Salary, from Board for Paupers, £105 per annum. No other doctor in parish. Single man preferred, there being no proper dwelling-house. Applications to Chairman of Board, John Box, Esq., House of Tongue, Sutherland.

MEDICAL OFFICER.—Wanted by the Zetland County Council a duly qualified Medical Officer, to reside in the county and visit and inspect each parish at least twice a year; will be required to perform the duties required by the Board of Supervision's regulations, and will be at liberty to engage in private practice. Applications, stating qualifications and salary expected, to be lodged with the County Clerk at Lerwick, not later than June 30.

VETERINARY INSPECTOR.—A duly qualified Veterinary Inspector, who will be at liberty to engage in private practice, required by the Zetland County Council. Applications, stating qualifications and salary, to be delivered not later than June 30 to the County Clerk, Lerwick.

SANITARY INSPECTOR.—A duly qualified Sanitary Inspector required by the Zetland County Council. He must devote his whole time to the duties of the office. If duly qualified, he may apply for the combined offices of Sanitary and Veterinary Inspectors. Applications to the County Clerk, Lerwick, by June 30.

SURVEYOR, &c.—The Burnham Local Board require a person to fill the offices of District Surveyor, Inspector of Nuisances, and Waterworks Manager. Salaries: District Surveyor, £40; Inspector, £40; Waterworks Manager, £25. Person appointed to hold the three offices. Applications to be sent to Mr. Richard Brice, Clerk, by July 7.

SURVEYOR, COLLECTOR OF RATES AND SANITARY INSPECTOR.—Wanted by the Brierfield Local Board, Lancashire, a competent person as above. Salary £120 per annum. Will be required to devote his whole time to the duties. Area (partly rural) 1,017 acres; population 5,500. Applications to be addressed to the Chairman of the Local Board, Local Board Offices, Crabtree Street, Brierfield, endorsed "Application for Surveyor, &c.," by June 23.

ASSISTANT ENGINEER.—Wanted, in the office of the Borough Engineer of Stockton-on-Tees, a qualified Assistant. Must have been educated according to the usual routine of pupilage. Experienced engineering and architectural draughtsman, with municipal knowledge. Further particulars on application to the Borough Engineer. Salary £130 a year. Applications to be addressed to the Borough Engineer, Mr. K. F. Campbell, A.M.I.C.E., not later than Thursday, June 19.

INSPECTOR OF WEIGHTS AND MEASURES.—The Hereford County Council invites applications for the appointment of Inspector for the County. Particulars can be obtained on application to Mr. J. F. Symonds, Clerk to the County Council, Shirehall, Hereford. Applications, stating age, salary required, &c., to be sent to the Clerk by June 24.

INSPECTOR.—The Bath Urban Sanitary Authority require a competent person to act as Inspector. His duties will consist principally in the superintendence of structural works, to abate nuisances, the repair and cleansing of fountains and urinals, and the inspection of house-drain connections. Salary £2 per week. Applications (endorsed "Inspector's Appointment"), stating age, &c., to be sent addressed to the Chairman of the Sanitary Committee, City Surveyor's Offices, Terrace Walk, Bath, by Tuesday, June 17.

INSPECTOR OF NUISANCES.—The Guardians of the Thakeham Union acting as the Rural Sanitary Authority require an Inspector of Nuisances. The Union consists of 18 parishes; area 38,784, and population 8,303. Salary £40 per annum. Applications, marked "Inspector," to be sent to Wm. Thomas Sandford, Esq., Clerk to the Union, Storrington, Sussex, by June 16.

INSPECTOR OF NUISANCES.—The Wallsend Local Board will, at their General Meeting on June 17, proceed to appoint an Inspector of Nuisances for the District. Salary £80 per annum. Applications to be sent to the Board Office, Elton Street, Wallsend, endorsed "Application for the Office of Inspector of Nuisances," by June 16.

INSPECTOR OF NUISANCES.—The Richmond (Surrey) Vestry Sanitary Authority require an Inspector of Nuisances. Salary £100. Applications (with copies of testimonials as to qualifications and character) to be sent to Mr. F. B. Senior, Clerk, 1, Hill-rise, Richmond, by June 30.

DEATHS.

BENSON, W., Inspector of Nuisances to the Leyton Urban Sanitary District of the West Ham Union.
MACPHERSON, Dr. A., Medical Officer of Health to the Hastingden Urban Sanitary Authority.
POWELL, G. B., L.R.C.P., L.R.C.S.Edin., Medical Officer of the 3rd District of the Nottingham Union.
WHEELER, Thomas, M.R.C.S.Eng., L.S.A., Medical Officer of the Bexley District of the Dartford Union.

LOAN.

THE Cowper Local Board are prepared to receive tenders for loan of from £4,000 to £5,000, repayable, principal and interest combined, for a period of ten years. Sidney & Son, Solicitors, Blyth.

CONTRACTS.

HINDLEY SEWAGE DISPOSAL WORKS.
(Contracts No. 1 and 2).

THE Hindley Local Board invite Tenders for the construction of works of Sewage disposal at Platt Bridge, near Wigan.

Contract No. 1 comprises intercepting sewers, main effluent, conduit and carriers, &c.

Contract No. 2 comprises the erection of engine, boiler and lime house, and chimney shaft.

Drawings, specifications, and quantities may be seen on application to the Engineer, Mr. W. L. Rothwell, at his offices, Cross Street, Hindley, where a printed copy of an abstract of the specifications, with the bill of quantities attached to each Contract, may be obtained.

Sealed Tenders, endorsed "Sewage Works," to be sent to the Clerk, Mr. Stephen Holt, by Monday, June 23.

CONSTRUCTION OF SEWER.

The Town Commissioners of Newry (Ireland) invite Tenders for the construction of a main sewer on the County Down side of the town, together with several branch sewers, all side entrances, manholes, ventilating shafts, &c.

Plans and specifications may be seen, and bills of quantities and form of Tender obtained, on application to Mr. J. L. Devenish-Meares, C.E., Town Surveyor.

Sealed Tenders, addressed to the Chairman, Town Commissioners, Newry, and marked "Tender" on the outside, to be sent in by June 28.

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BELFAST MAIN DRAINAGE WORKS.
(Contract No. 3).

The Corporation of Belfast invite Tenders for the erection of buildings and other works for pumping station.

Drawings and specifications may be seen at the City Surveyor's office, in the Town Hall, and copies thereof and of bills of quantities, with form of Tender, may be obtained on payment of five guineas, returnable if a *bonâ fide* Tender be furnished as prescribed, and on the drawings and specifications being returned.

Tenders in the prescribed form, endorsed "Main Drainage Works," addressed to Mr. Samuel Black, Town Clerk, to be delivered by June 18.

NELSON LOCAL BOARD.—WORKS OF SEWAGE DISPOSAL.

The Nelson Local Board invite Tenders for the construction of works of sewage disposal at Linedred, in the district of Brierfield. The works comprise intercepting chamber, pump and sludge wells, engine, boiler, and lime house, machinery-room, &c. &c.

Drawings, specifications, and stipulations may be seen on application to the engineer, Mr. J. A. Crowther, at his office, Town Hall, Nelson, where copies may be obtained.

Sealed Tenders, endorsed "Sewage Works," are to be sent to Mr. R. M. Proscott (Clerk to the Board), Town Hall, Nelson Lane, by June 23.

COUNTY BOROUGH OF STOCKPORT.

The Corporation invite Tenders for the construction of a Brick Bridge over the river Mersey, from near Millgate to the Fair Ground, in one arch, 65 ft. span, 38 ft. 6 in. wide, in brickwork; also Retaining Walls, about 37 ft. high, to river, with Culvert to Millrace, and other works.

Plans and specifications may be seen, and bills of quantities and forms of Tender obtained, from Mr. Alfred M. Fowler, M.I.C.E., Borough Chambers, Stockport.

Sealed Tenders, on the printed form, to be delivered to Mr. Walter Hyde, Town Clerk, not later than Monday, June 16.

SEWAGE SYSTEM.

The Guardians of Baltinglass (Ireland), invite Tenders for making a new sewage system at the Workhouse, in accordance with plans and specifications to be seen at the office of Mr. J. R. Dagg, Clerk, Baltinglass.

Sealed Tenders to be lodged with the Clerk by June 21.

HORNSEY LOCAL BOARD.

The Hornsey Local Board invite Tenders for adapting Machinery, supplied and erected, for the purpose of pressing the sludge resulting from the treatment of sewage, or, if necessary, for removing the said machinery, and for the supplying, erecting, and completing of other Machinery for the same purpose.

Forms of Tender may be obtained, and the works viewed on application to the Board's Engineer (Mr. T. de Courcy Meade, C.E.), at the Offices of the Board, Southwood Lane, Highgate.

Sealed and endorsed Tenders to be sent to the Clerk, Mr. R. C. C. White, Southwood Lane, Highgate, by June 23.

SEWAGE DISPOSAL WORKS.

The Corporation of Huddersfield invite Tenders for Contract No. 6 (Iron Roofs, Castings, Valves, &c.).

Specifications may be seen, and bills of quantities and forms of Tender obtained, on application at the offices of Mr. R. S. Dugdale, C.E., Borough Surveyor.

Sealed and endorsed Tenders must be delivered to the Borough Surveyor not later than Wednesday, June 25.

COMPETITIONS.

INSPECTORS OF FACTORIES.

THE Civil Service Commissioners have just issued a new scheme for the examination for inspectorships of factories. Hitherto, candidates who could produce a certificate of having been actually employed in a factory or workshop for seven years as employer, manager, foreman, or workman, were exempt from a part of the prescribed examination, but the new scheme applies to all candidates, the advantage given to practical men who have been engaged in factories already being that the maximum limit of age is extended from 30 to 38 years. The subjects of examinations are (1) handwriting; (2) spelling; (3) arithmetic, including vulgar and decimal fractions; (4) English composition; (5) theoretical and practical acquaintance with factories and workshops, including a knowledge of their sanitary requirements; (6) applied mechanics, including elementary mechanical drawing; (7) (*a*) the Factory and Workshops Acts of 1878, 1883, 1888 (Scotland), 1889, and the Truck Acts (1 and 2 Will. IV., c. 37, and 50 and 51 Vic., c. 46), also certain other Acts practically administered by the Inspectors of Factories, such as the Education and Protection of Children Acts; (*b*) an acquaintance with the history of factory legislation in the United Kingdom. Candidates must pass to the satisfaction of the Civil Service Commissioners in all these subjects. When two or more candidates are nominated for one vacancy the competition will be in subjects 5, 6, 7. The limits of age are 21 to 30, with an extension up to 38 in favour of candidates who have been occupied as master, manager, foreman, or workman in a factory or workshop for at least seven years, and have acquired practical acquaintance with the working of factories and workshops. An official nomination by the Home Secretary is required before examination.

NOTES AND QUERIES.

Having for some time back been in the receipt of Queries appertaining strictly to sanitary work, and which it would be easy to answer without having to refer our correspondents to competent professional advisers, we have opened a column in which to register such Queries and Replies thereto as can fairly be expected from us; and our subscribers and readers are invited to make such use of this column as will tend to benefit themselves and the community. Both Queries and Replies will, however, be subjected, if unnecessarily long, to a strict curtailment.

A BURGH SURVEYOR.—[The addresses of the various Sanitary Associations in England and of the Secretaries thereof, will be found in the SANITARY RECORD DIARY for 1890. The information you require can be obtained by application to the respective secretaries.—ED.]

PORT SANITARY EQUIPMENT.

Please to describe the complete sanitary equipment, including staff, appliances, legal power, structures, &c., of a large seaport, with inland water communication. STUDENT.

[*Staff.*—Clerk to the authority, medical officer of health, his clerk, inspector of nuisances and assistants, hospital staff, stewards and nurses, servants, and possibly assistant medical officer resident, boatmen, ambulance driver.

Appliances.—Ambulance boat (and vehicle, if land hospital), fumigating apparatus, boat or boats. A destructor for the disposal of infected articles of merchandise, as rags, &c., and of unsound food, as meat.

Structures.—Office accommodation for staff, a hospital (generally a vessel) properly equipped with disinfecting apparatus, mortuary, &c.

Legal Powers.—General powers under Public Health Act, 1875, Sections 110, 124, 125, 131; special powers under Local Government Board orders made under Section 130, and under Sections 287 to 292. These latter would be under order constituting the authority. See also Schedule V., Part III. Order of Local Government Board of July 17, 1873, made under Sanitary Act, 1866.

Quarantine Acts. Canal Boats Acts.

Answers to the questions set at the November 1889 examination of the Sanitary Institute for Inspectors of Nuisances will be found in the SANITARY RECORD for Dec. 15, 1889.—ED.]

INFECTIOUS DISEASE NOTIFICATION ACT.

If the persons required and specified fail to notify or certify the existence of a case of infectious disease, and the local authority order proceedings thereon, what officer of the local authority would be considered to be the "authorised person" to take the proceedings? S.C.

[Proceedings to enforce the penalty would be under the Public Health Act, ss. 253 & 259. The latter section enables a local authority to appear in any legal proceeding by their clerk, or by any officer or member authorised generally, or in respect of any special proceeding by resolution of such authority. It therefore rests with the local authority to authorise their clerk or some other officer, either generally to prosecute in such cases, or in each particular instance to resolve who is to conduct the proceedings.—ED.]

LEVELLING.

Would you or some of my brother readers give us a word on levelling? A description of the most useful and inexpensive instruments in use amongst surveyors. Where the different parts can be easily obtained, and the cost. Also, a cheap and practical work on the subject. All to be within the grasp of an empty pocket and head. A. B.

[For accurate levelling over any considerable distance, it is necessary to have a proper surveyor's level; to know how to use it, and to have a fair amount of frequent practice. You cannot procure the parts separately. F. W. Simms' work on Levelling, published by Crosby Lockwood & Son, Stationers' Court, E.C. (at 8s. 6d.) will be found useful. For fairly correct work over short lengths, there is no simpler and cheaper appliance than that figured at the top of page 569 of our last issue. Improvements will suggest themselves with use, as, for instance, by cutting a V notch along the centre of the upper surface of cross-piece, and tying a piece of thread tightly round each end, a pair of sights is furnished. A joint in the perpendicular piece made to tighten with a butterfly nut, would facilitate adjustment. Whatever instrument or appliance is used, the graduated rods should be placed as far apart as it is possible to read plainly; the level should always be set up half way between them, and the first set of observations should always be checked by a second set of sightings, to ensure accuracy. Our space will not permit of a description of the various instruments used, and of some simple expedients for taking levels, other than that above referred to; we may recur to the subject shortly.—ED.]

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